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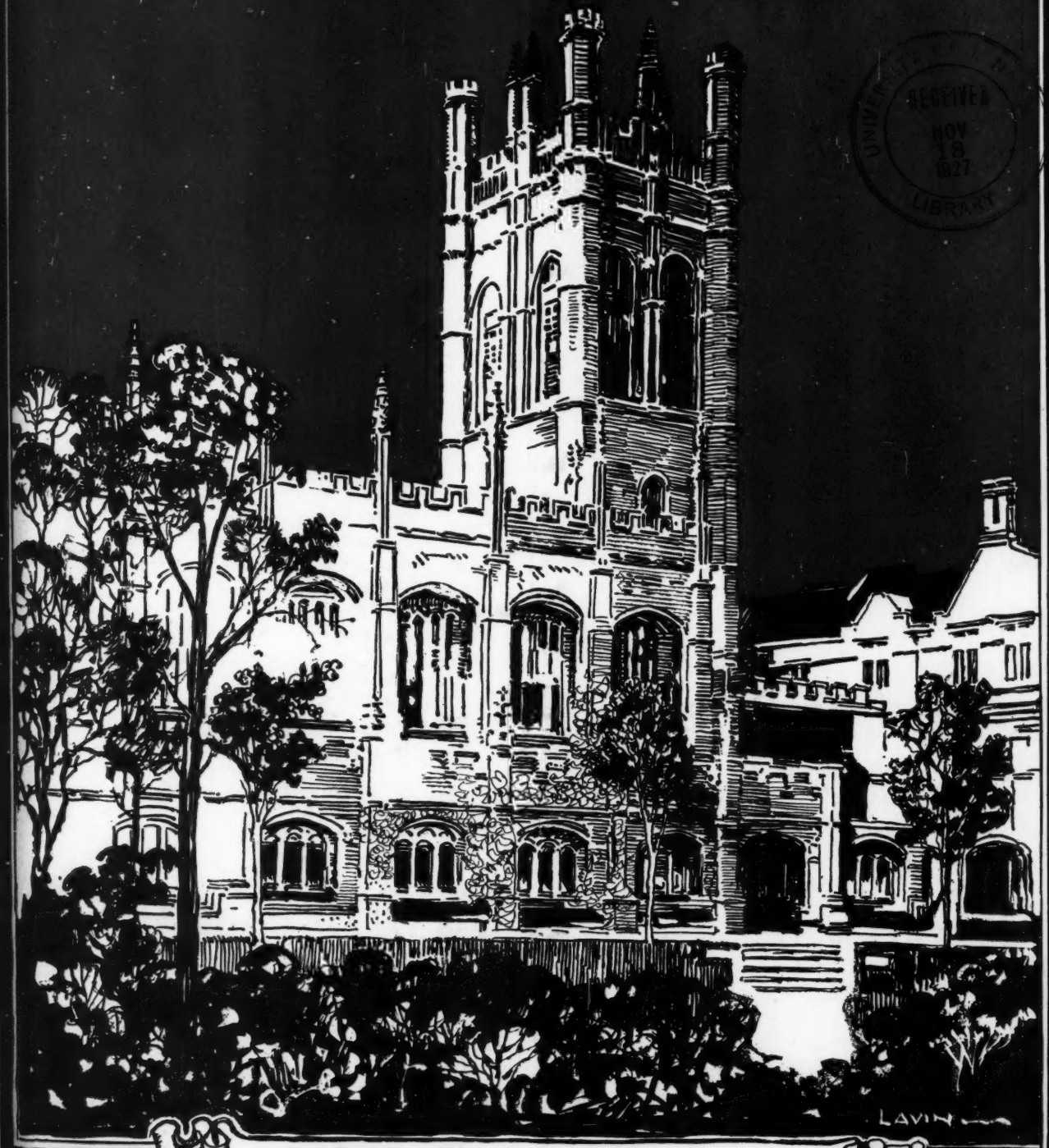

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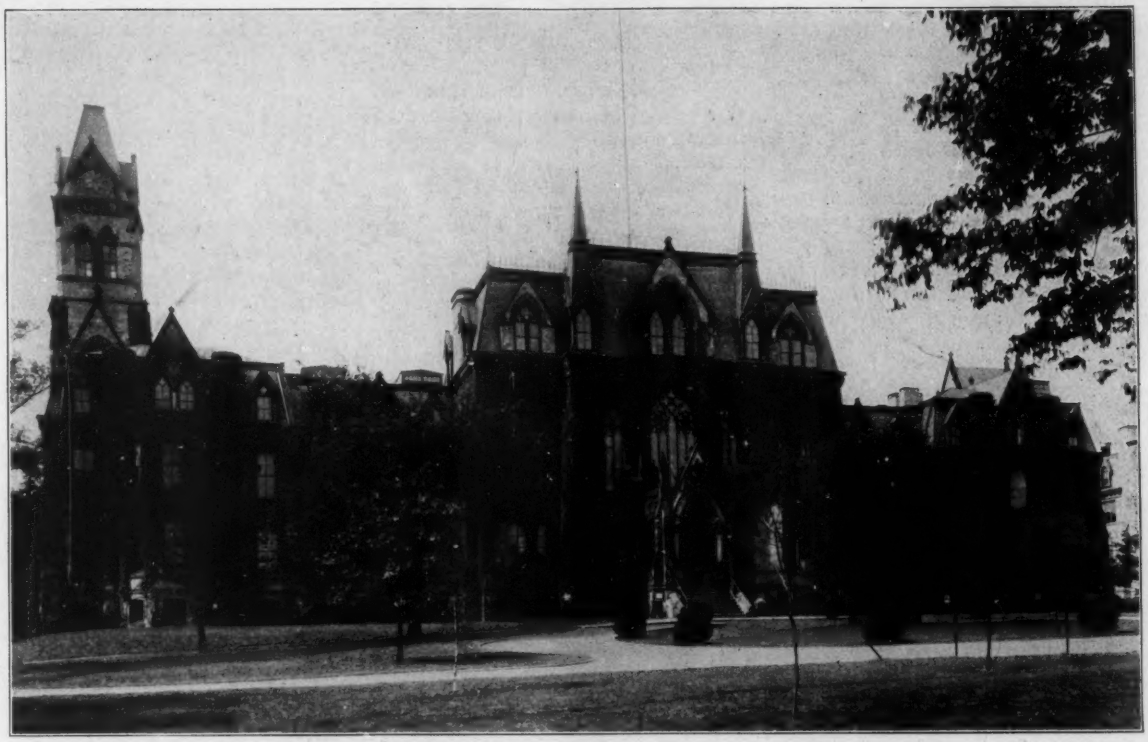
THE YOUNG FRANKLIN

Statue at the University of Pennsylvania



At the University of Pennsylvania—Wharton School of Finance and Commerce at Right

Schedule and Insurance Rating

Relating to Workmen's Compensation Insurance in The State of Pennsylvania

BY HARRY J. LOMAN

Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania.

THE Workmen's Compensation rates which are published in the rate manual represent the average cost for each given risk classification but make no allowance for differences existing between the various risks within any given classification. Since no two risks of any one classification are exactly alike schemes have been devised to reflect the differences between the hazards in an individual risk and the hazard in the classification as a whole. Any plan which accomplishes this object is called merit rating and is usually divided into schedule rating and experience rating.

In most states such rating is taken care of by the same organization that makes the manual rates, namely, the National Council on Workmen's Compensation. Pennsylvania being a large industrial state is in a position to make its own rates from its own exposure. Consequently a separate rate-making organization known as the Pennsylvania Compensation Rating and Inspection Bureau calculates all the compensation rates for Pennsylvania risks, subject to the approval of the Insurance Commissioner. This organization, which is maintained by the companies writing compensation business in Pennsylvania, has used methods of rate-making which are somewhat different from those adopted by the National Council and in some respects not so complicated. These remarks apply to the manual rates as well as the merit rates although the scope of this paper is limited to the latter. In the explanations which follow attention will be given to merit rating for manufacturing industries only, although separate plans of schedule rating have been devised for quarries and coal mines.

Schedule Rating

SCHEDULE rating in compensation insurance may be described as a method of measuring the influence of certain specific physical hazards on accident cost. Such measurement *usually* begins with a prescribed "standard." The "standard" may be on one of several bases, i. e. a perfect risk may be assumed as the "standard" in which case the schedule values would consist of charges entirely, or a very poor risk may be assumed as "standard" in which case all the items would be credits, or the average risk may be assumed as "standard" in which case there will be both debits and credits.

Strictly speaking, the system of schedule rating manufacturing risks in Pennsylvania is not on any one of these bases although it resembles the first method, especially insofar as it assumes that imperfect guarding and other physical defects cause the accidents. Briefly the subject is approached by ascer-

taining the "compensation values" of certain physical conditions and charging them against the establishments where they are found. This procedure necessitates an adjustment in the manual rate for each classification because these compensation *costs arising from specific physical hazards have already been included in the manual rate.* The adjustment referred to is reflected in a so-called "minimum rate" which is ascertained for each classification subject to schedule rating. The use of this "minimum rate" in connection with the schedule is so interwoven with the basic elements of the scheme that the "minimum rate" will next be described.

The "Minimum Rate" in Pennsylvania Schedule Rating

As indicated above schedule rating in Pennsylvania is unique in that it does not assume an "average" or a "normal" risk as a basis. Instead it assumes that no such thing as an "average" or "normal" risk exists. This is in accordance with actual fact inasmuch as an "average" risk exists only in a statistical sense. Nevertheless such statistical average has been used extensively as a convenience by means of which schedule rating might be applied. Since this "convenience" has been discarded in Pennsylvania let us examine the device which takes its place.

It has been explained already that schedule rating is supposed to equitably adjust the difference in hazard which any given plant in any rate classification possesses as compared with another risk in the same classification. To accomplish this by schedule rating it is necessary to know the accident cost of the various physical features found in a plant. An analysis of accidents and their costs and causes in Pennsylvania has revealed that the failure to properly guard any given kind of machine, power transmission, elevators, etc., results in a certain amount of compensation payments regardless of the industry in which the unguarded machine or other defective condition is found. Thus it has been ascertained that the failure to properly guard the driving mechanism of a "paper manufacturing machine" will cost $.55 in compensation payments in one year's time, and that the failure to guard the point of operation of a "dough mixer" will cost $10 in compensation payments per year and an elevator not enclosed on three sides will cost $2, etc.

WHEN this system of valuation is applied to a risk classification as a whole, a series of defects is bound to give rise to a charge which should be added to the premium. However, we must make allowance for the "credits". These may arise from "Safety Organization" or "First Aid" and to a large extent counterbalance the charges, although they seldom will exceed the charges. In fact, in most classifications this procedure results in an excess of charges over credits. If we add this excess of charges to the manual rate it will produce a total premium income in excess of that which would be obtained from the manual rate alone. Thus it was found in "Furniture Mfg." that the total charges of all schedule rated risks in this classification amounted to $21,194 and the credits to $10,102 on the payroll of $231,206 (00 omitted) or $21,194 minus $10,102 equals $11,092 extra income above the manual rate. However, sufficient total income can be derived from the use of the manual rate, hence a method must be devised to prevent the collection of this extra income. This has been accomplished by calculating the amount per $100 of payroll which would be collected because of this deviation and then subtracting such amount from the manual rate in order to produce the "minimum rate" to which charges may be added without reproducing a premium income in excess of that which would be derived from the manual rate. For example, the excess of $11,092 on Furniture Mfg. is found to be $.05 per $100 of payroll ($11,002, divided by $231,206, equals $.05). The manual rate for Furniture Mfg. for 1927 is $.80. Therefore $.05 is subtracted from $.80 leaving $.75 as the "minimum rate" to which the net charge or credit of *individual risks* is to be applied. (This so-called "minimum rate" should not be confused with the minimum premium.)

If this allowance of $.05 had not been made we would have had a duplication of accident cost in the premium because the manual rate includes the cost of all accidents in the classification and if we would add the charges for specific accidents the same accident costs would be counted twice. Hence the use of this device known as a "minimum rate" which adjusts the premiums from schedule rated risks so as to avoid the collection of extra premium income from a classification as a whole.

From the foregoing discussion it would seem perfectly logical and fair to increase the manual rate for those few classifications which, as a whole, have an excess of credits over the charges. If this were done the "minimum rate" would be higher than the manual rate and small payroll risks which are not subject to schedule rating would get a rate lower than the minimum rate used for the larger risks subject to schedule rating. Moreover the smaller risks would in all probability have a greater proportion of defects than the large risks. Obviously then, for practical reasons, the "minimum rate" can never be higher than the manual rate.

Divisions of the Pennsylvania Manufacturing Schedule.

ALL risks of a certain general nature have groups of hazards which are similar. With this in mind the general hazards or physical characteristics affecting them have been grouped as follows for manufacturing risks:

A. *Machines.* — Every machine must be listed separately and a flat charge is made for each machine whose driving mechanism is not guarded to standard. A separate charge is made for any other moving parts which are not guarded to standard. It will be observed this division considers the hazard as it affects both the operator of the machine and the other employees.

B. *Point of Operation.*—This is exclusive of the charges made under "machines" and relates only to the point of operation of special hazard as it affects the operator of the machine. Flat sums have been assigned and vary according to the kind of machine.

C. *Power Transmission.* — This includes all mechanical means of transmitting power from the prime mover up to, but not including belts, gears, chains or other similar devices *running to a single machine* as these are already considered in the driving mechanism of the machine. This heading is divided into (1) belts, (2) gears, and (3) projections.

D. *Elevators.*—The charges to be made against elevators are separated into

1. Shaftways without locks on all entrance gates.
2. Entrance gates not standard.
3. Car not enclosed to standard.
4. Shaftway not enclosed to standard.

E. *Safety Organization.*—If the safety activities of an establishment are conducted according to the prescribed standards they may obtain credits to the entire payroll as follows:

1. Complete safety organization—10% of rate.
2. Supervision and Inspection Service—7% of rate.
3. Inspection Service—5% of rate.
4. Education—1% of rate.

F. *First Aid.*—If there is provision for first aid in accordance with the prescribed standards the following credits may be applied to the entire payroll.

1. First aid—1% of rate.
2. Plant Dispensary—3% of rate.
3. Plant Emergency Hospital —5% of rate.

G. *Eye, Foot and Leg Protection (for Foundry Employees only).*

Valuation of the Items in Each Division.

EACH of the first four divisions are subject to charges if they do not comply with the standards of guarding which have been prescribed. The problem then is to go through each item and determine whether it meets the standard or not. If it does not a charge is made against the specific defect. As previously indicated the amount of these charges has been determined by an examination of causes of accidents and the cost of these accidents. Thus it has been found that the failure to guard the transmission of a woodworking machine has cost on the average $0.40 of compensation and that the failure to guard the point of operation on the same kind of machine has cost $8.00 in compensation payments. *Values have been assigned in this manner to all kinds of machines.* Hence all the inspector has to do is list the machines as he finds them and indicate whether they are guarded or not. The charges to be made against each can then be taken from the rating schedule and extended in the office. It should be observed that each of the charges in these four items is in the form of a *flat sum.* The remaining items, "Safety Organization" and "First Aid" to a large extent, have been assigned judgment values. These it should be noted are credits and are applied to the entire payroll. The use of credits in this case is for the purpose of encouraging accident reduction and since an establishment as a whole derives benefit from such methods the credit is in the form of a percentage and applies to the entire payroll. "Eye, foot and leg protection" applies to foundry employees only and a percentage charge is made if this protection is not used.

A Dormitory Archway At Pennsylvania

Rating

(*Continued from previous page*)

Eligibility to Schedule Rating

IN order for a risk to be schedule rated it must be in the "list of Classifications Subject to Schedule Rating" and develop a premium of not less than $100 at manual rates on a payroll of not less than $10,000.

Ascertaining the Net Charge or Credit on a Given Risk.

Let us suppose the "X" Manufacturing Company, which is listed in the manual as a Machine Shop, has an average two-year payroll of $2080. (00 omitted). Since the manual rate on this classification is $0.95 the manual premium would be $1976. An inspection of the plant results in the following:

A. Machines	*Premium Charge*
81 machines with driving mechanism unguarded	29.30
5 machines with other moving parts unguarded	1.25
B. Point of operation	
6 machines with point of operation unguarded	14.50
C. Transmission	
8 unguarded belts	1.40
D. Elevator	
1 car not enclosed to standard	2.00
Total charges	48.45
Credits	
E. Safety Organization	
1% Credit — 1% of manual premium ($1976)	19.76
F. Hospital and First Aid	
1% Credit — 1% of manual premium ($1976)	19.76
Total Credits	$39.52

The total credits of $39.52 are now subtracted from the charges of $48.45 and this leaves a net charge of $8.93. We next find what this charge is in terms of the average annual payroll. $8.93÷2080= $.004 charge. This, however, is not applied to the manual rate, but to what has been described previously as the "minimum rate." "Machine Shops" is a classification which, as a whole, has more credits than debits and therefore the minimum rate is the same as the manual rate of $.95. Adding the charge of $.004 to $.95 we have $.954 as the schedule adjusted rate. This is now expressed in terms of manual rate. This it may be seen is 100% (to the nearest whole number) in this case.

Advantages and Disadvantages of Schedule Rating.

THE principal advantages of this method of merit rating may be summarized as follows:

1. It adjusts the inequities arising out of differences in physical hazards between different risks in a given classification.

2. It directs attention to specific defects and thus gives the insured an opportunity to make improvements and reduce his insurance rate.

OTHER ARTICLES

BY

Professor LOMAN

Will Appear In Coming Issues of

THE JOURNAL OF AMERICAN INSURANCE

3. Directs attention to the causes of accidents and shows where to direct accident prevention activities.

The disadvantages are:

1. The determination of the *exact* values of the various physical hazards is practically impossible.

2. There are some risks such as "contractors" which cannot be subject to schedule rating.

3. There are many intangible factors included in the causes of accidents and since these "morale" items cannot be measured in terms of physical hazards the system is incomplete.

4. New "compensation values" must be ascertained whenever the benefit schedule is revised.

Experience Rating.

IN view of the disadvantages of schedule rating which have just been given it has been found necessary to supplement it with another form of merit rating known as experience rating. This provides for a modification of the rate depending on whether the experience of a given risk is favorable or unfavorable when compared with the others in the group. It will be seen that such a plan contemplates the inclusion of the intangible causes of accidents or the so-called "Morale" items.

Qualifications for Experience Rating in Pennsylvania.

Every risk for which the premium developed by the payroll for the experience period at current manual rates if $1000 or more shall be subject to "Experience Rating." The "Experience period" is the *five policy years* preceding the current policy period or so much thereof as the risk shall have been insured by an authorized carrier, but in no case to be less than two full policy years preceding the current policy period.

Experience Rating Procedure in Pennsylvania.

The modification of the rate is expressed in a percentage. This is arrived at by a formula and the percentage is then applied to the manual or schedule rate as the case may be. The formula referred to is as follows:

$$\frac{\text{Realized Losses} - \text{Expected Losses.}}{\text{Expected Losses.}} \times \text{Credibility}$$

X is given percentage of Credibility

This formula needs further explanation.

"Realized Losses" are the actual reported losses of a given risk translated to the 1927 rate level. That is, the actual loss payments which were made over the experience period (i. e. the 5 preceding policy years) are classified according to (1) Deaths and Permanent Totals; (2) Major Permanents; (3) Minor Permanents; (4) Temporary Compensation; and (5) Medical.

The Deaths and Permanent Totals are then valued at an average cost figure of $2700 per case if the present manual rates when applied to the payroll for the entire experience period equals or exceeds $80,000 of premium. For risks with less than $80,000 premiums for the experience period a graded scale of values has been adopted indicating the maxium value to be used for any one accident. Thus if the current manual rate when applied to the payroll for the experience period yields only $1000 the maximum value of any one accident is $600; for $2000 of premium the

(*Continued on page 29*)

Public Liability Insurance

Needed Protection Which Is Often Overlooked by the Business Man Who Has Not Thought the Situation Through

EVEN he who skims may read daily of the increasing generosity of courts and juries with other people's money. Verdicts in successful suits for damages arising out of the legal responsibility of one person for the safety and well-being of all others are mounting with perceptible speed. A casual examination of a single current issue of one insurance journal, not hand-picked, reveals one award in Houston, Texas, of $38,000 for the death of a husband and father of three children, and another of $15,000 against a New York dentist for permanent injuries to the mouth of a patient, which the court held to be "not excessive".

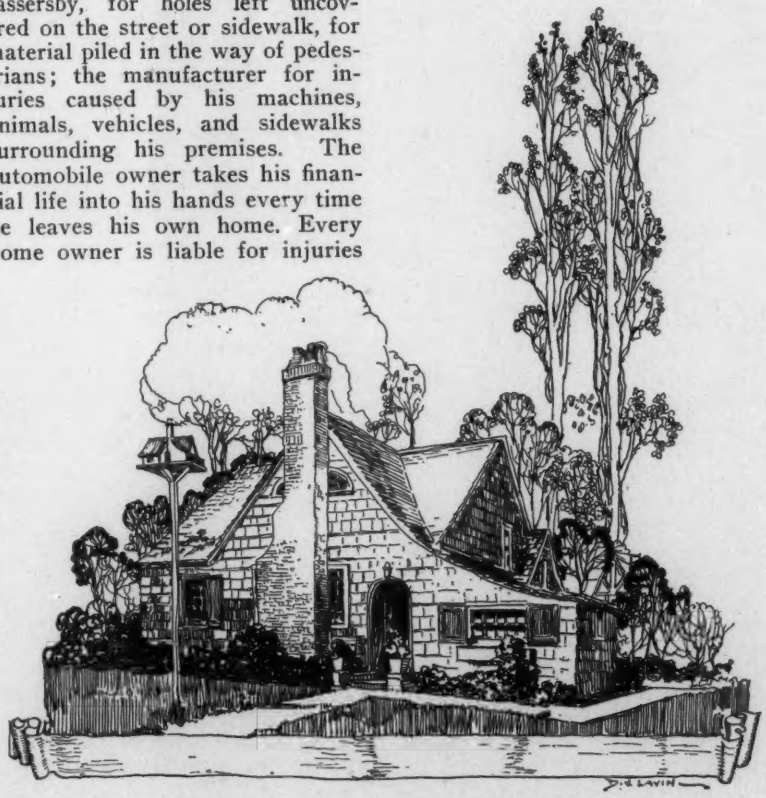
It is the function of public liability insurance in general, to protect the earnings, past, present and future, of an individual or a business, from the tremendous shock of having to meet losses such as these. And because the successful verdict is not the only source of possible loss, the public liability policy goes a great deal further than mere indemnity for court awards. Among other promises the company makes in the contract with the insured called the policy, it includes one which for practical purposes is every bit as important as the promise to indemnify: the promise to defend all suits in the name of the insured. In every respect, in short, the company steps into the place of the insured and relieves him from all worries connected with at least one hazard of business or existence.

WHAT is this hazard? Stated simply it is the possibility that the individual, either himself or acting for others, will violate, in some way or another, the fundamental doctrine of the law of negligence, which makes every man his brother's keeper. Every man must always act as a reasonably prudent person would, nor may he do anything which a reasonably prudent person would not do. Negligence law of course is concerned only with the *non-intentional, non-contractual* wrongs committed by the individual, and thus offers no jurisdiction for actions corrected respectively by the criminal and civil branches of the law. But between the positive and negative limits set by this apparently simple code, the individual has presented to him literally limitless opportunities to get into trouble, and entirely innocently. The owner or general lessee of an office building is held legally responsible if he has failed to maintain stairways, elevators and sidewalks in safe repair; the contractor erecting a new hotel or office building is responsible for the acts of every one of his workers; for rivets dropped on passersby, for holes left uncovered on the street or sidewalk, for material piled in the way of pedestrians; the manufacturer for injuries caused by his machines, animals, vehicles, and sidewalks surrounding his premises. The automobile owner takes his financial life into his hands every time he leaves his own home. Every home owner is liable for injuries to all persons whom he invites or tolerates on his property. The "movie" owner is liable to his customers to use care; the golfer is liable for the erratic flight of his ball; even the manufacturer for spoiled, tainted or otherwise defective products causing harm to the consuming public. The number of legal damage-causing possibilities is endless, and for the business of any size is intensified by the fact that every employer is liable for the acts of his workers, exactly as for his own.

By C. A. KULP

Professor of Insurance.
Wharton School of Commerce.
University of Pennsylvania

AS the casualty insurance business is at present organized, there is no single policy cover for all the public liability hazards. Public liability insurance is a generic term, and comprises a whole family of third party covers in addition to those we shall discuss under the heading of "Miscellaneous." For example, the workmen's compensation hazard is excluded



Even a Cosy Home May Harbor Potential Disaster

(workmen's compensation is really a form of liability, the difference being that liability is determined by special statute) because this hazard is so important as to demand entirely separate treatment. Likewise the hazard of legal liability for injuries to others arising out of the ownership, possession or use, of automobiles; of steam boilers, flywheels and electrical machinery; and of aircraft, for all of which, in recognition of their size or peculiar underwriting problems, there are individual covers. Again, strictly speaking, miscellaneous public liability insurance covers only loss and/or expense arising through the legal liability of an individual for injuries to the *persons* of others, excluding legal liability for *property damage* resulting from negligent acts. Nevertheless, because *property damage liability* covers are complementary to corresponding public liability policies, we shall, for the sake of completeness, note them in the following description.

Just as public liability insurance is divided into a number of non-competing lines, so miscellaneous public liability insurance embraces many different types of policies, depending on the particular hazard involved. No single insured could pay for complete miscellaneous public liability protection, no single insured has need of it. The various policies may conveniently be classified from either of two viewpoints: (1) Depending whether the legal liability assumed by the policy is *direct* or *indirect;* and (2) depending on the *occupational characteristics* of the hazard.

The following is a list of these hazards, briefly described, each of which is covered by a policy bearing a corresponding title:

1. Direct Liability

(1) *Manufacturers' Public Liability.*—Issued to manufacturers and covers the responsibility of the insured for his own acts and those of his employees. It covers all injuries caused on the insured's premises by his machines (excluding elevators), animals, vehicles and sidewalks. Many persons on all sorts of business are in and about the premises of the manufacturer daily, including applicants for employment, salesmen and collectors, customers, delivery men and visitors. To all of these the manufacturer owes a duty to use care. A leading characteristic of all miscellaneous public liability covers should be noted; each policy excludes coverage of hazards afforded by other miscellaneous or other public liability lines. The manufacturers' policy, for example, excludes liability for aircraft, automobiles, elevators, teams, products and contracts (the last four to be described presently).

(2) *Contractors' Public Liability.*—This is issued to general and building contractors, public utility and mining companies, and to manufacturers who install their machines or other products in the place of business of their customers. Covers generally the same hazards as the manufacturers' form.

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AT HOTEL BILTMORE NEW YORK CITY

(3) *Owners', Landlords' and Tenants' Public Liability.*—Covers the hazards confronting owners and lessees of mercantile premises, office buildings, hotels, restaurants, schools, hospitals, churches, clubs and the like. The name commonly given this policy is that of "general liability". The elevator hazard may or may not be included.

(4) *Elevator Liability*—Issued to owners, landlords and tenants of properties with elevator facilities. It is usually covered under the owners', landlords' and tenants' form, except when different amounts of insurance are requested for each, in which case different policies are issued.

(5) *Teams' Liability.*—Issued to the owners or users of teams, bicycles, handtrucks, push carts, and saddle horses. The specific leading hazards are those due to careless driving or loading, defects in vehicle construction, etc.

(6) *Theatre Public Liability.* — The owners or lessees of theaters and motion picture houses, opera houses and other properties used in the amusement business (excluding dance halls, bowling alleys and the like which are insured under owners', landlords' and tenants').

(7) *Product Public Liability.* — Every manufacturer, retailer, and eating place proprietor is legally liable for losses arising from the consumption, handling or use of his commodities. The following are among the most important types of risk eligible for the insurance: Bakeries, boot and shoe manufacturers, canneries, cigar and cigarette manufacturers, packing houses, restaurants, and retail stores handling drugs, delicatessen, meats, etc.

(8) *Sports Liability.* — This is issued to persons who desire protection against damage resulting from their legal liability for accident by reason of practice or participation in a game of golf, baseball, basketball, football, hockey, polo, tennis or any other athletic sport or games. A separate policy covering the golf hazard only is increasingly popular.

(9) *Professional Public Liability.* —Issued to physicians, surgeons and dentists to cover their liability for "malpractice, error or mistake committed or alleged to have been committed by the assured in the practice of his profession or by any assistant while acting under the assured's instructions." Criminal acts are of course excluded and acts committed while under the influence of intoxicants or narcotics.

(10) *Contractual Public Liability.* —Certain individuals and businesses assume liability by terms of a contract, as the assumption of responsibility by a manufacturer for the consequences of all accidents occurring on a spur of a railway line. Such a contract relieves the railway company; for the manufacturer to be similarly relieved he needs a contractual liability policy.

(11) *Residence and Farm Employer's Public Liability.*—Farm laborers in every state but one are excluded from the benefits of the state compensation act. To cover this farm labor hazard is a primary reason for the residence and farm employer's policy, although it covers the public liability hazard as well.

2. Indirect Liability.

The distinguishing characteristic of the indirect public liability covers is that they protect against a hazard which is contingent rather than immediate.

(1) *Contractors' Contingent (Protective) Public Liability.*—This is sold to an individual, firm, or corporation engaged in construction

work for another under contract. A direct liability policy is not complete insurance of all the liability hazards confronting the manufacturer. It covers only accident due to the acts of the insured or his workmen. Frequently, indeed usually, the sub-contractors on the job are not insured, and in event of action for damages for the acts of the sub-contractor or his workmen, joint suit may be instituted against both the principal contractor and the sub-contractor. It is this contingent hazard which forms the subject matter of this policy.

(2) *Owners' Contingent (Protective) Public Liability.*—The same form which is used for contractors' contingent coverage is used also to cover the similar indirect liability of the owner of a building under construction, when the work is being done by independent contractors.

(3) *Landlords' Contingent (Protective) Public Liability.*—Issued to the owner or lessee of a building who has leased or subleased the entire building to another. He may be held contingently liable together with the lessee or sub-lessee.

A Typical Public Liability Policy.—It is not possible within the limits of this and the succeeding article on this subject, nor is it desirable, to describe in detail the precise coverage granted in each of the policies we have outlined. Because it is the most comprehensive of all the miscellaneous public liability lines, the owners', landlords' and tenants', or general, public liability policy will be analyzed as representative of the basic coverage offered by the group. Wherever there are important exceptions or additions to the coverage of this basic policy which are not apparent on the face of things, note will be made.

The provisions of policy contract will be discussed, not in the exact order in which they appear in the printed form, but according as they group themselves naturally about the following five-fold division:

(1) Promises of the insurance company
—before a suit for damages
—after a suit for damages
(2) Promises of the insured
(3) Rights of the insurance company
(4) Rights of the insured
(5) Methods of premium calculation

This procedure is followed, not in order to be different, but partly because the policy contract, like Topsy, "just grew" and partly because the parts of the contract which the insurance company wishes to emphasize are not necessarily those most important for the present purpose. The analysis follow:

1. *Promises of the Insurance Company.*

(a) *Before a damage suit.* The company is permitted *to inspect* the premises insured, including the elevators, (1) for the purpose of discovering structural or operative weaknesses, if any, and for the suggestion of needed improvements. In this respect, as in most others, the policies of the various casualty companies are not exactly similar in wording. One contract mentions inspection not as a right but a privilege, following the custom of the leading steam boiler companies who refuse to promise inspections because of their fear of liability for failure to inspect.

(b) *After a damage suit.*

(1) The company promises *to investigate* claims brought against the insured.

(2) It promises also *to defend* in the name of the insured all suits or claims arising out of injuries covered by the policy. These injuries are defined as "bodily injuries, including death at any time resulting therefrom, accidentally sustained by any person or persons except those employed by the assured or those to whom the assured may be held liable under any workmen's compensation law." (2) They must result from the "ownership, care, maintenance, occupation or use" of the premises described in the application, which are made to include sidewalks, ways or premises adjoining the insured's property. Ordinary repairs are considered as maintenance and use of the property. Thus accidents are included occurring both on the premises and off, off-premise coverage limited only by the provision that accidents occurring away from the premises be either the result of ownership, maintenance, or use of the premises, or be the result of the business operations of the insured.

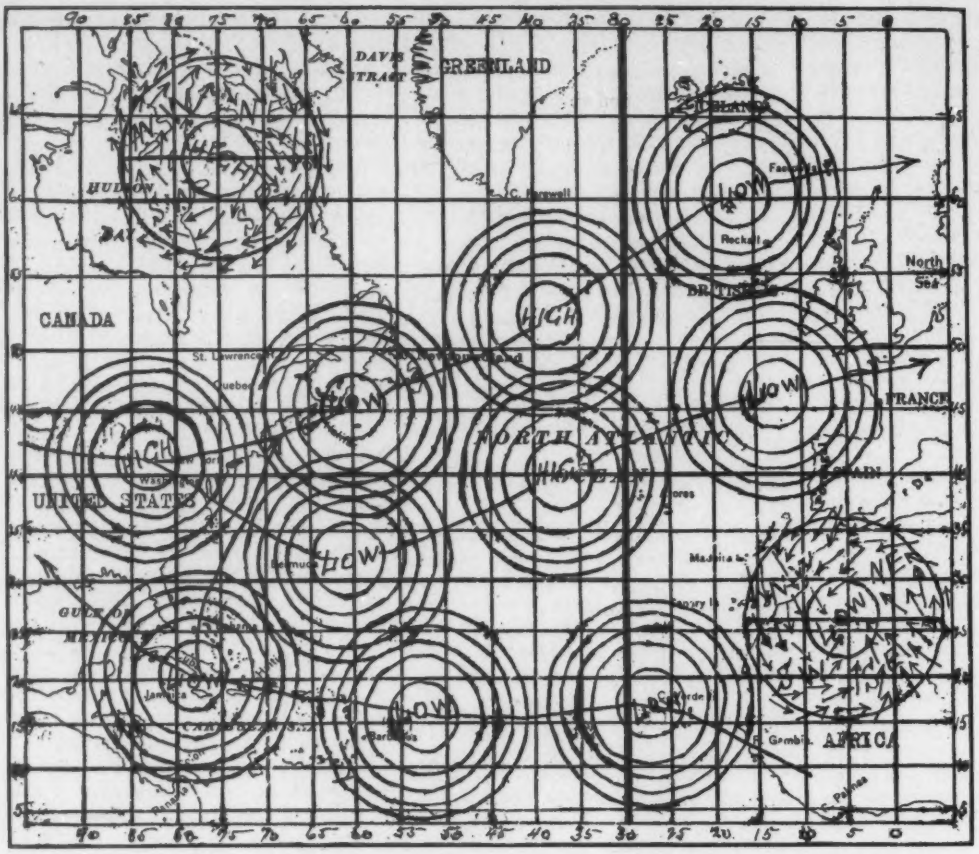
(1) The premises and/or elevators insured, and all other information needed by the company in order to determine the desirability of the risk, are described in the application which is a part of the policy.

(2) An example of an obvious exception to the basic coverage is the residence and farm employer's public liability policy, which covers farm workers.

(*Continued on page 30*)

Photo by P. & A.

Within the Scope of a Scene Like This Are Dozens of Little-Thought-of Hazards to Life and Property



***Flying Weather** over the North Atlantic in relation to Aviation Insurance. The Distribution and Movement of areas of HIGH and LOW Pressure from Canada and the United States eastward over the North Atlantic entering Europe; and of Hurricane LOWS developing in the Doldrums and moving westward over the West Indies to the Gulf of Mexico, and curving northward east of Florida. Circulation in a Key-Quadrant HIGH and in a Key-Quadrant LOW for the four Quadrants. NW, NE, SE and SW. Ideal presentation of HIGHS AND LOWS to show Succession, Circulation, and Type-Paths. Charts subdivided into five-degree squares for convenience in locating position.*

The Rainfall Hazard

Fundamental Factors Related to This Weather Risk and Their Practical Application to Underwriting

By COLONEL JOHN P. FINLEY
Consulting Meteorologist and Manager National Storm Insurance Bureau, New York City

Article IV. Rainfall Diurnals.

EIGHTH SECTION

IN THE treatment of the September rainfall problems, now presented to us, we are called upon to face the effect of the waning influence of the summer type of atmospheric circulation, the termination of the flat trajectories and broad isograms of the season of seed-time and harvest; the approach of the perihelion passage of the radius vector of the earth's motion in orbit when, due to its eccentricity, the earth is about three million miles nearer the sun; the passage of the autumnal equinox or the crossing of the equinoctial circle at the earth's equator on September 22d, at which time the days and nights are equal, and the march of the sun's diurnal path southward to the winter solstice at the Tropic of Capricorn. These momentous, physical changes introduce the succession of the seasons in outward nature, and invite us to contemplate the advance signals of a dying year. But people in general, notice few of these premonitory signs. Not until the falling leaves begin to flutter about their feet, and the fruit ripens in orchard and vineyard, do they begin to realize that autumn is really here, that season of fulfillment, when everything is mellow and finished. That season of the year when the northern hemisphere of the earth is turning yet farther away from the sun, upon which all growth and development depends. We are entering that period when the trees are a glory of red, yellow and russet brown, when corn stands in full shocks in the field, and day after day of warmth and sunshine follow through royal October, succeeded by the warm, dry and hazy atmosphere of lazy Indian Summer. It seems to be impossible to believe that slowly and surely, winter is approaching. But soon the chilly winds whistle through trees from which the bright leaves are almost gone; a thin skim of ice-crystals shoots across wayside pools at evening, and speedily shivering winter is upon us. Just before Christmas, this part of our earth has tipped its farthest away from the sun. Then, for a few days the hours of darkness are at their longest. The sap has withdrawn far into the roots of trees until the cold shall abate; leaden skies drop snow flakes and the earth sleeps under a mantle of white. Under these conditions the reader and the student are asked to consider the Plates of Rainfall Diurnals and of Rainfall Curves, during and representative of this critical month of September.

IT WILL be noted that the amount of rainfall diminishes over the land areas and begins to increase over the great water areas. Cyclones

and anticyclones from the North Pacific move eastward across our country in higher latitudes. North of latitude 40 degrees fewer cyclonic storms cross the North Atlantic. Gales are more frequent over southern sailing routes, and the activity of the Atlantic and Pacific doldrum areas is increased. Whereas, in the months of May to August inclusive only one or two years out of twenty, from 1905 to 1924 inclusive, fail to report a tenth of an inch or more of rainfall, between the hours of 2 and 9 P. M., there were five years in September when this failure was recorded. The descriptive title of Chart No. 1 in this Article explains the nature of it in its application to the relation of flying weather to the problems of Aviation Insurance. All of the flights and attempted flights, across the North Atlantic, either from east to west, or west to east, since the memorable solo flight of Lindbergh, have met with adverse atmospheric conditions that either seriously retarded the flights or resulted in fatalities and the destruction of the planes. A careful study of these flights in connection with the charting of HIGHS and LOWS across the North Atlantic has developed the following significant facts:

1. The passage of these cyclonic and anticyclonic areas, especially the former through their southern sectors.

2. Attempting to fly through the southeast quadrant of cyclonic areas.

3. That during the passage or attempted movement through the southeast quadrant of the LOW the baffling winds and excessive precipitation encountered could not be overcome by greatly increased ceiling or the reverse, when in some instances, the plane hovered within a few feet of the sea.

4. The failure of all air pilots to recognize the extreme dangers of a passage through the southeast quadrant of a cyclonic LOW.

5. The lack of training and expert knowledge to enable the pilot to avoid the southeast quadrant of a cyclonic LOW, by changing his course to pass through the western sector of such LOW and skirt its northern border in passing it on the safe side.

6. The failure to understand that the phases of the weather across the North Atlantic, regardless of the season, embrace a continued succession of HIGHS and LOWS between the continents of America and Europe.

7. The failure to appreciate that the flying problem in crossing the North Atlantic must take into account the circumvention of HIGHS and LOWS through their safe quadrants, which necessitate the avoidance of the southeast quadrant under all curcumstances.

8. The failure to reallize that the speed of the plane in progressive eastward or westward flying is about three times the progressive movement of centers of HIGHS and LOWS. These facts will enable the pilot to guide his plane in circumnavigating the cyclonic LOW and to take advantage of the most favorable quadrants in the succeeding anticyclonic HIGH.

9. The failure to profit by the preceding experience of lost air pilots who met their Waterloo in the southeast quadrant of a cyclonic LOW. All of the fatalities of the season of 1927 in the North Atlantic have occurred in some portion of the southeast quadrant of a cyclonic LOW.

THE above experience, although covering only a single flying season in one year, has still brought results of prime importance in dealing with the problem of Aviation Insurance. A scientific rating of the flying hazard of the North Atlantic must take into account the experiences of the flying season of 1927. Air pilots not qualified by expert knowledge and training to safely make the passage of the North Atlantic, in either direction, are tainted with a serious hazard that compels a higher rating for special hazards. Undoubtedly these matters will be taken into consideration by the government bureaus charged with the examination of pilots and the inspection of planes when granting licenses of qualification for carrying passengers, property and mail.

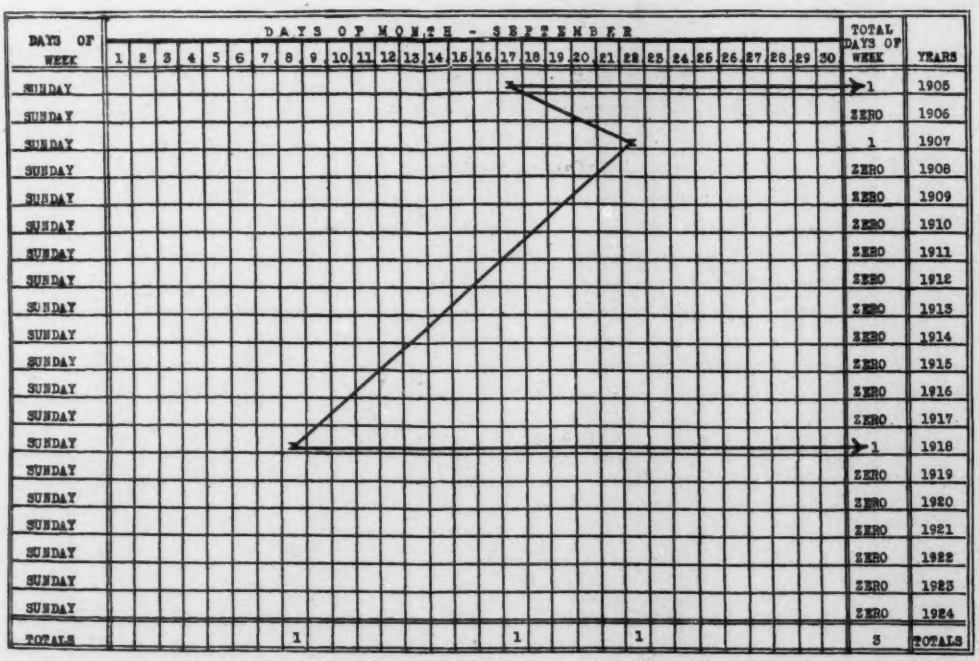

DAYS OF WEEK
DAYS OF MONTH - SEPTEMBER
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
TOTAL DAYS OF WEEK
YEARS
SUNDAY 1 1905
SUNDAY ZERO 1906
SUNDAY 1 1907
SUNDAY ZERO 1908
SUNDAY ZERO 1909
SUNDAY ZERO 1910
SUNDAY ZERO 1911
SUNDAY ZERO 1912
SUNDAY ZERO 1913
SUNDAY ZERO 1914
SUNDAY ZERO 1915
SUNDAY ZERO 1916
SUNDAY ZERO 1917
SUNDAY 1 1918
SUNDAY ZERO 1919
SUNDAY ZERO 1920
SUNDAY ZERO 1921
SUNDAY ZERO 1922
SUNDAY ZERO 1923
SUNDAY ZERO 1924
TOTALS 1 1 1 3 TOTALS

PLATE No. 1.—Rainfall Diurnals—Rainfall Occurrence—September. Correlation of days of the week (Sunday) with a tenth (0.10) of an inch or more of rainfall between the hours of 2 P. M. and 9 P. M. during a period of twenty years (1905 to 1924 inclusive) at the U. S. Weather Bureau Station, New York City.

NOTE A—Observations made by Automatic Self-Recording Raingage and checked with a Direct-Measurement-Non-Recording Raingage. Both U. S. Weather Bureau standard instruments located on the roof of the Station Building, New York City, 394 feet above sea-level. The letter (X) in the rainfall line distinguishes the day and year of measured and recorded precipitation. The curve-graph lines are formed on a uniform basis and progress from left to right in regular sequence.

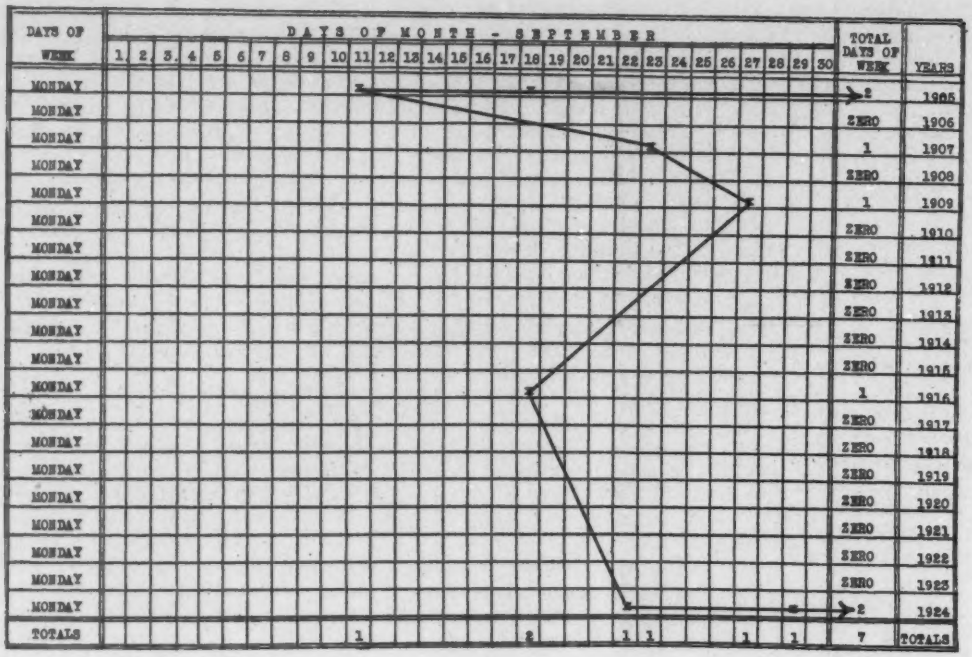

DAYS OF WEEK
DAYS OF MONTH - SEPTEMBER
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
TOTAL DAYS OF WEEK
YEARS
MONDAY 2 1905
MONDAY ZERO 1906
MONDAY 1 1907
MONDAY ZERO 1908
MONDAY 1 1909
MONDAY ZERO 1910
MONDAY ZERO 1911
MONDAY ZERO 1912
MONDAY ZERO 1913
MONDAY ZERO 1914
MONDAY ZERO 1915
MONDAY 1 1916
MONDAY ZERO 1917
MONDAY ZERO 1918
MONDAY ZERO 1919
MONDAY ZERO 1920
MONDAY ZERO 1921
MONDAY ZERO 1922
MONDAY ZERO 1923
MONDAY 2 1924
TOTALS 1 2 1 1 1 7 TOTALS

PLATE No. II.—Rainfall Diurnals—Rainfall Occurrence—September. Correlation of days of the week (Monday) with a tenth (0.10) of an inch or more of rainfall between the hours of 2 P. M. and 9 P. M. during a .period of twenty years (1905 to 1924 inclusive) at the U. S. Weather Bureau Station, New York City.

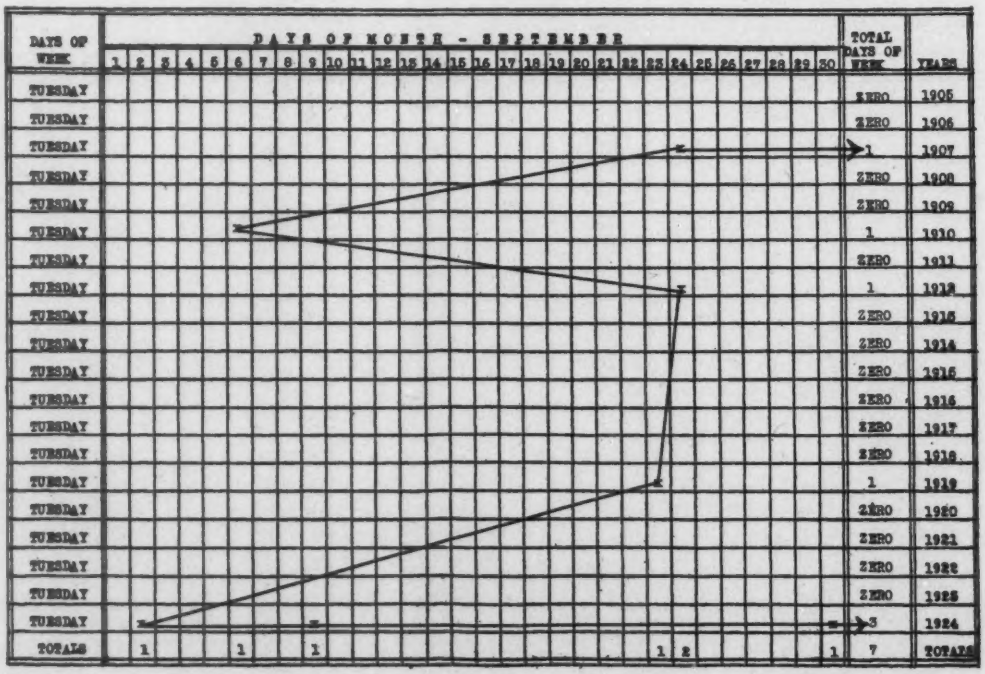
See Note A—Plate I.

When flying over land areas the passage of or through anti-cyclonic HIGHS and cyclonic LOWS present difficulties somewhat less acute than those prevailing over large water areas, where the freedom of atmospheric circulation is not interfered with by abrupt changes in topography. However, over the land areas, especially during the summer season and throughout the Middle West of the United States, violent local storms are encountered such as destroyed the ill-fated Shenandoah in early September. Air pilots must acquire the knowledge by adequate training and experience, that they cannot hope to override the dangers of violent local storms by resorting to a higher ceiling.

The relation of fog occurrance to the formation and movement of anti-cyclonic HIGHS and cyclonic LOWS must be more carefully studied and the knowledge practically applied in the operation of air transportation. The areas of HIGHS and LOWS must be entered and passed with a full knowledge of how to avoid the dangerous SE. quadrant, the somewhat less dangerous NE. quadrant, and navigate the safer SW. and NW. quadrants.

These problems of an atmospheric nature, seriously affecting aviation are closely related to THE RAINFALL HAZARD for that hazard is a concomitant of the origin and

(Continued on page 26)


DAYS OF WEEK
DAYS OF MONTH - SEPTEMBER
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
TOTAL DAYS OF WEEK
YEARS
TUESDAY ZERO 1905
TUESDAY ZERO 1906
TUESDAY 1 1907
TUESDAY ZERO 1908
TUESDAY ZERO 1909
TUESDAY 1 1910
TUESDAY ZERO 1911
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TUESDAY ZERO 1917
TUESDAY ZERO 1918
TUESDAY 1 1919
TUESDAY ZERO 1920
TUESDAY ZERO 1921
TUESDAY ZERO 1922
TUESDAY ZERO 1923
TUESDAY 3 1924
TOTALS 1 1 1 1 2 1 7 TOTALS

PLATE No. III—Rainfall Diurnals — Rainfall Occurrence—September. Correlation of days of the week (Tuesday) with a tenth (0.10) of an inch or more of rainfall between the hours of 2 p. m. and 9 p. m. during a period of twenty years (1905 to 1924 inclusive) at the U. S. Weather Bureau Station, New York City.

See Note A—Plate I.

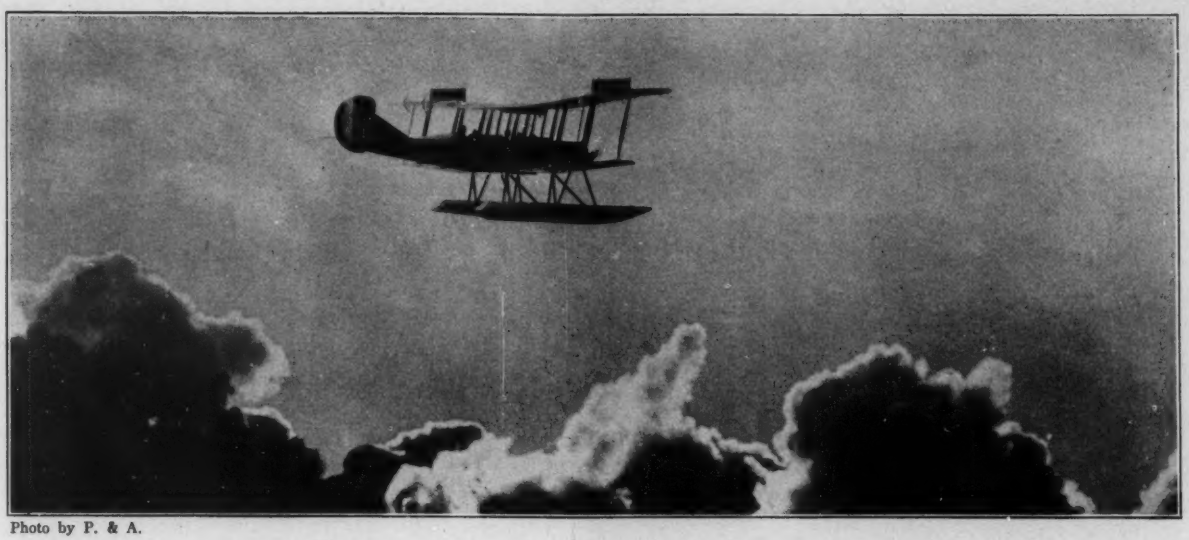

Photo by P. & A.

Aviation Insurance

Scope and Nature of This Interesting New Branch of Underwriting

By STEPHEN B. SWEENEY

Assistant Professor of Insurance
Wharton School of Commerce
University of Pennsylvania

ARTICLE III

REVIEW OF AVIATION INSURANCE IN THE UNITED STATES (PART I)

THERE were private aviation activities in the United States before the World War but there does not seem to be any record of organized commercial aviation enterprise. The airplane was looked upon by many as a plaything or at best as a dream that would require many years for fulfillment. Investigation does not disclose even the sporadic requests for aviation insurance found in Europe before 1918.

Early Post-War Aviation Insurance.

THE first policy of American aviation insurance is supposed to have been written in 1918 by the Queen Insurance Company of America. In the early post-war days there were no regular aviation insurance policies. The ordinary automobile or fire policies of the issuing company were used. The aviation coverage was affected by merely attaching special endorsements which extended the coverages of the ordinary policy to the aviation risk.

The beginning of the year 1920 found a number of companies actively interested in aviation insurance. There are no statistics of the extent of this interest because of the practise of reporting the aviation insurance business as a part of the fire insurance or automobile insurance writings. It is known that The Globe and Rutgers, The National Liberty, The Home, The Aetna Life, The New York Fire, The Firemen's Fund, The Travelers, The Hartford, The Merchants' Fire Assurance and The North British and Mercantile insurance companies began writing policies during the first two post-war years.

The demand for insurance at this time did not come from regularly organized operators. There are no records showing that they existed even then. The War Department had a great many training land and sea planes on its hands at the signing of the Armistice in November, 1918. These planes, and much equipment, were sold at auction for whatever they would bring. Many of them did not bring very much because it was known that the rough usage they had received at the hands of instructors had made them worth very little. Besides this there was the fact of a relatively small demand.

THE main demand for these surplus war planes came from the men who had been trained as army or navy pilots. These men had the same difficulties that other ex-service men had in getting readjusted to civilian life. Many of them welcomed the opportunity, offered by the sale of aircraft at bargain prices, of capitalizing their war training. They bought the war planes and many of them became what are known as "gypsy-flyers". They were usually without a fixed base. The whole country-side was the field of their operations. They were notorious for the lack of care they gave their flying equipment. Many of them started on long enterprises each summer which consisted of stopping at the various vacation resorts and taking passengers for short flights for varying sums of money. Their enterprises necessitated their meeting new flying conditions almost continually. The nerve strain of carrying joy-riding passengers is much greater than the strain of carrying cargo.

Many of these gypsy flyers sought a living and a continuation of their war-time thrills by engaging to do stunting and various kinds of acrobatics over large crowds. "The stunting pilot will have to be closely watched," said an English ex-flying officer. "Some (and amongst these are our finest fighters) seem to get 'mad' in the air; they can never resist stunting, even at low altitudes. To such, flying seems to give no satisfaction unless big risks are constantly being taken. They are sublimely unconcerned as to the expense of replacing a machine. They frequently crash, and if hurt, go on to another machine as soon as they

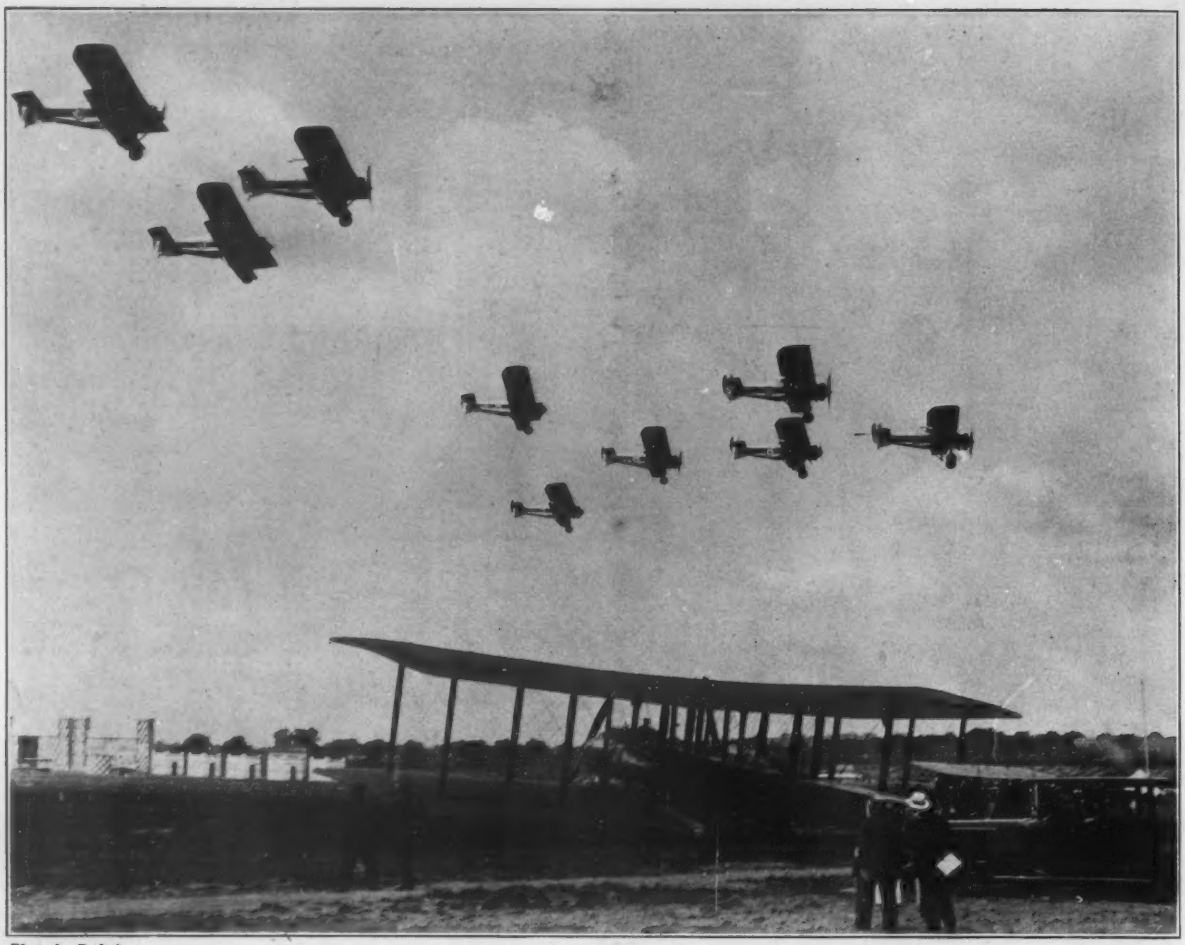

Photo by P. & A.

An exceptionally good demonstration of formation flying. This is by the British Royal Air Force and was witnessed by many interested American observers.

recover, just as though nothing had happened. No civilian employer would be likely to endure this type of pilot for any length of time." Luckily for the public, however, their numbers became smaller with the passage of time following the close of the World War. They either killed themselves off or went into other lines of business because of the gradual disappearance of bargain-priced war planes, the cheapness of which had been the main incentive for them to capitalize their war experience.

These gypsy-flyers were largely the type of pilot and operator that the American insurance companies were called upon to insure during the post-war days. This is the type of pilot that they did insure. The author of the above quotation, writing in England, goes on to say, "For some time to come the List of Pilots will need to be considered more critically than the corresponding Lloyd's List of sea captains. It is a question whether a pilot who crashes on landing, except in very special circumstances out of his control, should not have his name removed from the list."

THE situation of the early American underwriters can be pictured when it is recalled that there was no "list" of pilots in this country until 1921. The pilot could crash his plane and carry on his foolhardy undertakings under the protective wings of a different underwriter. These underwriters took the various applicants largely on faith. There was no literature on the subject of aviation insurance. Such statistics as the following (and those given in the fourth article) were not available until the disastrous years were past. The table below gives some idea of the relative hazard of insuring gypsy flyers particularly.

If we can judge by miles flown per fatality it will be noticed that the gypsy-flyers were more than two times as hazardous risks as were the War Department pilots. The significance of this is more apparent when it is recalled that army pilots are continually trying out new aviation features and are often engaged in mass maneuvers. Flying in squadron formation is more hazardous than solo flying.

	Period	Total Miles Flown	Fatalities	Average Miles Flown per Fatality
Itinerant (gypsy) flyers	1921-23	9,000,000*	196	48,300
War Department	1921-24	22,157,096*	211	104,536
Navy Department	1923-24	4,108,500*	27	152,156
Post-Office Department	1918-24	9,213,318	40	230,333
Commercial Companies	1921-23	8,767,800	25	350,715

*Estimated by W. F. Poorman.

The extreme comparison is even more forceful. Gypsy-flyers were seven times more hazardous as risks than were commercial companies' pilots.

It is felt by those interested in commercial aviation and especially by those interested in aviation insurance, that too much emphasis cannot be placed on these tardily known facts about gypsy-flyers. It is feared that the excessive losses which many of the first American aviation underwriters suffered will harmfully and needlessly limit the aviation activities of other American underwriters. It is also feared that this unfavorable history will tend to keep rates too high unless it is forcibly presented that the conditions of the post-war days cannot be repeated.

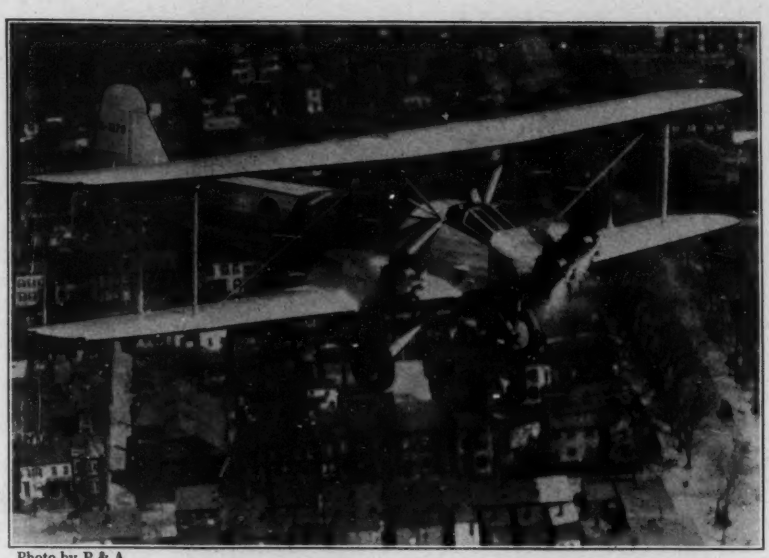

Photo by P & A

Aviation has created a new hazard. As, for instance, what if this plane should have dropped on a House?

The National Aircraft Underwriters Association.

THE dangers connected with trying to pioneer separately were soon apparent to the first American underwriters. On March 12, 1920, a group came together at the offices of The Home Insurance Company. It was composed of representatives of The Aetna Life, The New York Fire Insurance Company, The Firemen's Fund, The North British and Mercantile Insurance Company and The Home Insurance Company. That group organized and named the National Aircraft Underwriters Association. Invitations were extended to all underwriters who might be interested as well as to those actually doing aviation insurance business.

Two kinds of membership were created, active and associate. Active membership was restricted to those actually engaged in aviation underwriting. The associate members were those underwriters who had been actively engaged in underwriting but had temporarily ceased their activity and those who contemplated activity at some time in the future or who felt that the activities of the Association would be of indirect benefit to them in their allied field. The number of associate members was generally much larger than the number of active members. The former paid nominal dues, whereas the active members bore the balance of expense. Their assessments were determined by the amount of business written the previous year.

AT the first annual meeting of the Association on November 30, 1920, the chairman of the executive committee reported, "We have as active members of our Association all companies but one writing aircraft insurance and I believe that the combined experience of our member companies will include ninety-five per cent of the insured planes of the country." This was certainly a noteworthy start and it seemed full of bright possibilities. Careful study of the files and various records of the Association convinces one that, if successful underwriting were at all possible during these early years, this organization would have found the way.

According to the original constitution the Association was organized for the following purposes:

1. To serve as a medium of exchange of information.
2. To supervise and recommend the adoption of suitable policy forms and endorsements.
3. To investigate class and general hazards and to procure and compile information and statistics concerning losses and their causes. To devise, advocate and promote all reasonable and proper means of eliminating or reducing the hazards insured against and to promote intelligent underwriting.

The Registration and Grading of Pilots.

AFTER the foregoing discussion of the exceptional hazard of gypsy-flying, it is little wonder that the first activity to be suggested for the Association was the compilation of information about pilots. This suggestion was made at the first meeting of the Association. Among the duties of the paid secretary, the first three on the list were: (1) To collect pilot records, (2) to verify pilots' statements submitted, and (3) to keep insured loss records by pilots.

All of the known pilots of the country were canvassed to register with the Association. A very complete questionnaire was submitted to each registrant. It contained practically all the questions now submitted by the insurer to the insured regarding the pilot. It asked particularly the details of the pilot's experience at commercial and cross-country flying. The questions regarding the accident history of the pilot were also very detailed—comprising the date, location, cause, type of plane and the extent of damage.

A number of conferences were held by the representatives of the various active members. Some of the representatives had been war pilots and with their help a "Pilot's Grading Code" was finally drawn up. Pilots were graded A, B, C, D and X according to a carefully worked out point system. The point groups were based on the information found in the Pilot's

(*Continued on page 30*)

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The Voice of Authority

THE old—and rather cheap—witticism which is based upon the alleged impracticality and abstractness of the college professor still persists in some quarters, but it persists merely as a vestage of a viewpoint which is rapidly passing. In former days we thought of higher education as a thing apart from life. It was an adventure in realms of thought, speculative, philosophical, unrelated to the problems which were vexing men and women who toiled in the market places and workshops of the world—at least so these men and women were disposed to regard it, and there was a measure of justification for their viewpoint.

One of the favorite jokes was about the absent-minded professor, to whom every sort of absurdity was attributed. We recall chuckling in boyhood over the erudite authority on the significance of the iota-subscriptum in Greek literature—or some similar abstruse question—who, required to get his own breakfast on a morning when his wife was ill, decided that a three minute egg was the simplest and most nourishing fare. Whereupon he put a saucepan of water on the fire, and when it came to the boil, dropped his watch into the water and gazed meditatively at the egg held in the palm of his hand. We can still smile at the story, but we realize it is no longer typical. Our acquaintance with college professors is sufficiently wide and varied to sustain the conclusion that there is no group of men today more alert, more keenly interested in the practical affairs of the world, more eager to make knowledge applicable to the solving of life's problems.

THAT fact is due to the sweeping change in the attitude and methods of education which is characteristic of our time. First, there has been a growing realization that the acquirement of knowledge justifies itself in the measure in which it contributes to effective living. That is not to discount the value of knowledge for its own sake, as an intrinsic enrichment of the mind, an indispensable factor in what we call culture. There are many things which although they may seem to have little bearing upon the practical side of existence, are none-the-less worth knowing because they widen our mental horizons and increase our capacity for appreciation of the wonder and beauty in the world. But that is not enough. Knowledge must fit men to live; it must solve livelihood problems; it must enable us to create an environment of greater security, more responsive to our needs; it must teach us how we can cooperate with nature so as to obtain from her the largest measure of good. And these things knowledge is doing for us as never before.

It is doing them because the changed attitude has developed a new method. The magic word in education today is "research." Perhaps it has been over-emphasized. We note a current of reaction in some of the things that lately are being said and written; but it is only the wholesome reaction which will hold in check any tendency to extremes. Nothing can halt the research method in its sane and useful application. It has demonstrated its value. And already repaid hugely the sacrifices of those who were pioneers in its development.

Space does not permit any summary of what has been accomplished, but in such fields as agriculture, fuel production and use, building materials and construction, manufacturing processes—the dye industry is a notable example—and many others, the college professor in his laboratory has become the chief adviser, the voice of authority, for men of so-called practical affairs.

Industry and commerce are turning today to the universities for guidance. One of the new problems which the educational administrator has to face is to retain his faculty of able men against the competition of great concerns in the realm of business and production which bid for their exclusive services.

MUTUAL insurance was quick to recognize the importance of linking its interests to so valuable a source of information. It carried its problems to the college professor. It asked him to bring his knowledge of mathematics, of physics and chemistry, of economics and sociology—yes, and psychology—to a study of the many questions which arise in this rapidly widening domain of cooperative human enterprise. And he responded, cheerfully and helpfully.

The Journal of American Insurance, which holds an unrivalled, and, indeed, an unchallenged place in the exposition of its chosen theme, has been singularly fortuate in its ability to secure the work of the best and most original minds in the discussion of subjects pertinent to the interests of mutual policy holders. A survey of recent issues of this Journal will disclose how large a place the voice of authority has had in its pages, the authority of the research student, of the trained mind in the laboratory, of the man who speaks only after test and experiment, but speaks then with the enlightening knowledge of one who is able to understand the practical significance, the applicable value of what he has learned.

In Mutual Insurance it is obviously important that such knowledge as this should be diffused as widely as possible. It is not enough that a few experts should be in possession of the facts and the theories which they sustain. Mutual insurance must have its experts, but it must have, also, an intelligent constituency of policyholders. In large degree its strength lies in the readiness of the contributors—who are also the sole proprietors—to work understandingly with the experts in developing the value of the service it can render, and in safe-guarding the common fund from the invasion of foolish risk and needless hazard. The Journal of American Insurance feels that it can be of greatest use in promoting general understanding, and in providing a channel through which the latest and most important results of research may become known to the policyholders throughout the country.

Life-Lights Against a Business Background

Concerning a Decent Respect for the Other Fellow

By S. J. DUNCAN-CLARK

"THERE is no true self-respect that does not entertain a decent respect for the other fellow."

It was a wise man speaking; a man who has traveled much and known all phases of life. We went to college together years ago. I had seen little of him since. Commencement day we shook hands, and the next day our paths diverged. I settled down to the earning of a livelihood; he, with sources of income sufficient for his needs, set out to tour the world. It was the beginning of many voyages and treks for him, which carried him into strange places and among strange peoples. Every now and again I heard of him—in India, in Africa, in South America. He had acquired fame as a writer of books and a lecturer. Once I encountered him in the Chicago loop as he was hurrying to catch a train, and once I listened to him discourse concerning the curious customs of a tribe he had lived with for the space of several months in the interior of Borneo

He came into my office, unannounced and with the casual suddenness of such men.

"I AM going to rest awhile," he said, "if I can. I have been going up and down on the face of the earth so long that I am not sure that I can stave off the wanderlust for more than a few weeks, but I had a sharp attack of malaria on the Yangtze a month ago, and while the spirit is still restless the flesh protests."

"So you come from China," I said.

"Yes, from China. I have been traveling about that vast country for nearly three years, chumming with the natives, eating with them, lodging with them, hiking with them along impossible roads, or slowly navigating their rivers."

"How in the world can you tolerate such companionship—a man of your tastes and intelligence?" I exclaimed.

"My tastes, as a matter of fact, are simple—and catholic," he replied. "As for my intelligence, it is certainly no greater than that of many a Chinaman. But your question brings to mind a half-formed purpose with which I have come back to America; that is to be a missionary of tolerance to my own people. I am amazed at the amount of prejudice which I find in my home country—the country I have been accustomed to regard as the freest and most enlightened in the world.

"What we need is a decent respect for the other fellow—there is no true self-respect without it. In all my travels I have not yet encountered a race which could not produce many a man potentially my equal in qualities of mind and character, and I have met many a man of other races and nationalities who was much my superior. I have reached the conclusion that there is no such thing as an inferior race. Humanity is humanity, wherever you find it. Some peoples have had greater opportunities than others; some peoples have advanced farther along certain specific lines than others, and some so-called advanced peoples have lost virtues which others more primitive still retain. The pigmentation of the skin has nothing to do with it; a man may be yellow, or black or red and be just as good a man as any white man.

THIS attitude of condescension, and, often of contempt for other people because they differ from us in color, in language, in creed or in customs, only reflects upon ourselves—it is an evidence of ignorance. Childishly we dislike the unfamiliar, and our dislike rationalizes itself into an assumption that the unfamiliar is uncouth, or stupid, or even wicked; that it is, at least, the earmark of a lesser breed. Some of us have got as far as toleration, which is not very far. It means a conceited putting up with what we cannot cure. But tolerance has much headway to make. It is a finer thing. There is in tolerance and intelligent recognition that the other fellow may be right—right at least for himself and his own environment; there is recognition that in his unfamiliar ways there may be elements truly worth while, deserving our appreciation. Tolerance does not conceive it to be its duty to make everybody else in its own image. It prefers a world in which people differ, and with open mind tries to learn from it."

"But ," said I, "would you put an end to all effort to change the ways of people for better ways?"

"Not at all." he answered. "But I would seek to change the ways of people by reason and persuasion. And I would want first to be very sure that I had something better to offer, not merely something which suited me better. I would bear in mind, also, that it might be possible to improve upon my own ways; that, in fact, there was just a chance I might be mistaken. And always I would advocate my own conception of the better with a genuine respect for the thought and feeling of the other fellow. I would be willing and eager to hear his defense of his own ways, recognizing that there is just a chance he might be right.

"Tolerance, as I see it, does not mean that I must abandon my own opinions and convictions; or that I must not speak them, and write them with all earnestness and persuasiveness I can command. Inneed I have very little use for those people who think they are tolerant and broad-minded because they hold no clear-cut or cherished ideas and beliefs about anything. There is no virtue in that sort of tolerance, and as for its being broad-minded—well, it is broad in the sense of being spread out so thinly that there is no depth to it. But there is real virtue in a tolerance which can hold its own convictions and be fervent in sustaining them, but, at the same time, respect the independence and intellectual integrity of others. It is an admirable tolerance which can say, 'I disagree utterly with your opinions, and some of them I detest, but I will fight and die, if need be, for your right to hold and to speak them.'

SOMEBODY has said 'Tolerance is the only real test of civilization-and I think there is much in that statement. In a high civilization opinion is free, and the right of opinion is everywhere respected. Men differ courteously through vigorously. Modern industry has introduced standardization and it is a most useful thing, contributing greatly to convenience and economy. But we must beware of applying standardization to personality as we apply it to machines and commodities. That is the certain road to the destruction of civilization. Human personality must be at liberty to expand, to adventure, to leave the beaten track and blaze new roads.

Insurable Interests Of Bailees

Explaining A Phase of Insurance Which Is Somewhat off The Beaten Track, But of Large Importance

By EDWIN W. PATTERSON

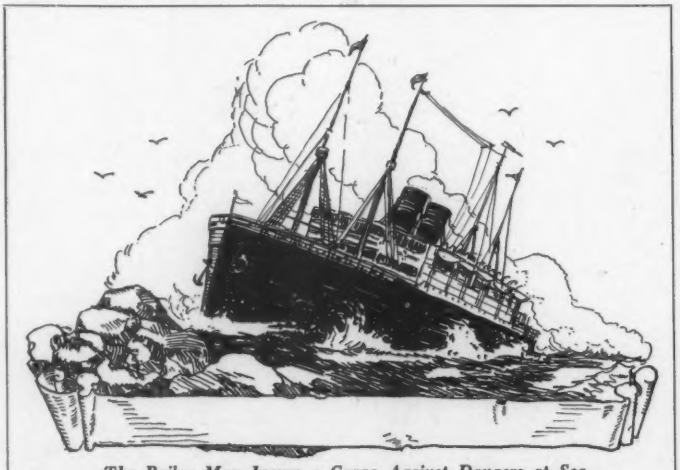
Professor of Law in Columbia University

Author of "THE INSURANCE COMMISSIONER IN THE UNITED STATES"

INSURANCE companies sell coverage just as manufacturers sell blankets, in various sizes, shapes and qualities; and only time will definitely tell, in either case, whether the purchaser got his money's worth. There the similarity ends. The buyer can try out the coverage of his blanket on any cold night, but he has no occasion to try out the "coverage" of his insurance until a loss has occurred. Then he may find, after a losing battle in court, that he is out in the cold. The insured does not have the coverage which he wants unless he can predict with certainty that a court will officially declare that he has that coverage. True, most insurance companies will do better by the insured than they are legally bound to do. The insured, however, pays good money for legally enforceable protection, not for philanthropy. The extent of his legal coverage can be ascertained, in most instances, by consulting the statutes and judicial decisions which apply to his particular type of property interest and type of policy. The present paper will be based upon the judicial holdings pertaining to policies issued to the holders of a particular type of property interest, namely, to bailees.

"BAILMENT" is a term used to describe the legal relations between a person (called the "bailee") to whom possession of movable property is delivered by, or on behalf of, another person called the "bailor," who is usually, but not necessarily, the owner of the property. The bailee has possession of the property, but not ownership; the bailor has no possession, but ownership, or at least a right to reclaim possession from the bailee upon the termination of the bailment, which may be for a definite or an indefinite period.

Thus, the term "bailment" is an abstract term which takes no account of the business purposes for which the transaction is entered into. As a matter of law, not all bailments are business transactions; some are purely gratuitous arrangements, such as gratuitously keeping a neighbor's silverware while he is out of town, or gratuitously borrowing a neighbor's lawnmower. The present discussion will be confined to bailments for business purposes. Even so, there are many and varied types of business transactions which fall under the head of "bailment." The transportation of goods by rail, by water, or in any other way, forms one important group of bailment transactions. Another embraces the storage of goods in a warehouse, or of grain in an elevator, and the depositing of valuables with a safe deposit company. Still another large and miscellaneous group of bailments is represented by the delivery of articles to a bailee for the purpose of having him perform some service which repairs the articles or alters their character. Examples are the dressing of furs by a bailee for the owner, the manufacture of clothing by the bailee from the bailor's cloth, the laundering of garments by a laundry company, etc. In all of these cases the bailor derives a benefit from the services of the bailee, whom he compensates. In another type of bailment, the bailee derives a benefit from the use of the bailed article, for which he pays the bailor. "Leases" of machinery are of this type.



The Bailee May Insure a Cargo Against Dangers at Sea

SINCE the bailee has possession of the goods, he is in many ways in a more advantageous position than is the bailor to take out insurance against the perils which threaten destruction or injury to the goods, as fire, theft, loss at sea, etc. This point will be more fully developed further on. At all events, the custom of having the insurance attended to by the bailee is a very old one. In an English admiralty case of the sixteenth century, it is stated that in Lombard street, London (the place where marine insurances were effected) and in the Burse of Antwerp, it has been the custom time out of mind that the party in whose name the assurance is made is not bound to specify in the same whether the goods assured are his own or for any other man's account, since commonly merchants have their own goods assured by their factors (a class of bailees) and their friends who have no interest in the property, and yet the insurers are bound to pay.[1] A similar custom (at least as regards bailees) is, as is shown by the cases cited later on, in operation at the present time.

1 Holdsworth, The Early History of the Contract of Insurance, 17 Columbia Law Rev. 85, 97 (1917), citing Ridolphye v. Hunez, Select Pleas of the Admiralty (S. S.) ii, 52, 53 (1562).

However, insurance by bailees gives rise to some interesting problems in insurance law. The bailee is not the owner of the bailed property, yet he is in a position to control the occurrence of loss or damage to it. What is there to prevent the bailee from insuring the property in his own name, secretly burning or stealing or otherwise making away with it, and then collecting the insurance money from the insurer? Even if the bailee does nothing to bring about the loss of the goods bailed, should he be allowed to gamble on the destruction of another man's goods by taking out an insurance policy which will pay him, in the event of loss or damage, more than the injury which he personally sustains?

FROM a legal point of view, insurance by bailees encounters difficulty in three legal principles. The first is the principle of indemnity, which is the principle of construction of all policies of insurance on property; the insured may not recover, in case of loss, more than the amount of loss or damage which he sustained by reason of the happening of the injury to, or destruction of, the property insured. The second is the public policy against insurance contracts which tend to incendiarism or other fraudulent or criminal activities which defraud the insurer, throw upon honest policyholders an additional burden in the form of enhanced premiums, and diminish the national wealth. The third is the public policy against wagering and gambling contracts, whereby persons might be enabled to gain a livelihood without engaging in any productive or useful labor or enterprise. Wagering contracts are commonly made illegal in the United States, either by statute or by judicial decision. It may be noted that if the principle of indemnity is applied strictly, it will be impossible for the insured to gain by reason of a loss under a policy of insurance upon property; for if the insured has an interest in the property he will collect only the amount of damage to that interest. To carry out these principles, the law generally requires that the insured have an "insurable interest" in the property insured.

With these principles in mind, we are in a position to ask, "Under what circumstances, and to what extent, may the bailee insure the bailed property?" Upon analysis, it appears that the bailee has not one, but several different insurable interests in the property. These may be classified as follows: 1. The bailee's proprietary interest. 2. The bailee's contingent liability interest. 3. The bailee's representative or trustee "interest."

I. The Bailee's Proprietary Interest.

SINCE we have said above that the bailee has possession but not ownership of the bailed goods, how can it be said that the bailee has a "proprietary" interest in the goods? The latter statement must be regarded as a qualification of, or an exception to, the former. The bailee may, under some circumstances, have a limited proprietary interest in the bailed article, a kind of limited ownership which is, so far as it goes, superior to the rights of the bailor. A common example is the interest of the pledgee-creditor in the property which the pledgor-debtor has pledged by delivering it into the possession of the creditor to hold as security for the payment of the debt. Here the pledgee has the right (i. e., privilege) to hold the property until the debt is paid, and, after the debtor defaults in payment, likewise the right to foreclose his lien by a suit in court to have the property sold, or by selling the property, without any judicial proceedings, in accordance with the rules of common law or statute or with the special provisions of the pledge agreement. In either case the proceeds of the sale belong to the pledgee, to be applied on the debt. In legal parlance, the pledgee has a *real* security, that is, a right against a specific thing (*res*) in addition to his *personal* security, his claim against the debtor personally. Since the destruction of this thing will deprive the pledgee of his real security and leave him only his *personal* security (which may be inadequate), the pledgee is regarded in law as sustaining a loss by reason of the destruction of the chattel. Accordingly, it is well settled that the pledgee has an insurable interest in the pledged property up to the amount of his loan, including the interest and, it would seem, the necessary legal expenses of enforcing his lien. In case of loss or damage to the property due to the perils insured against, the pledgee may recover on his policy an amount at least equal to the debt and its incidents, if that be less than the value of the property destroyed, and less than the maximum amount named in the policy.[2]

ANOTHER type of bailee's proprietary interest, and perhaps the commonest, is the lien which the bailee has upon the bailed property as security for his compensation for the services which he performs for the bailor, in transporting, storing, repairing, or otherwise dealing with the property. While at common law this lien, which arises in favor of the bailee even without any express agreement between the bailor and bailee, gave the bailee merely the privilege of holding the property until his charges were paid, and not the power to sell the property, yet the bailee has the right (seldom resorted to, it is true) to sue in a court of equity to foreclose his lien by sale of the property. By statute or contract he sometimes has a power of sale. Thus the loss of, or damage to, the bailed articles causes the bailee a direct loss or damage, which gives him an insurable interest. Accordingly, the law is well settled that the bailee may insure the property in his own name and, in case of loss, collect and keep the insurance money to the extent of his charges for which he has a specific lien.[3]

In the New York case just cited, a clothing manufacturer who had contracted to make clothing out of another's cloth, had performed services upon the cloth to the value of $250 when it was damaged or destroyed by strikers. The manufacturer had procured insurance on the clothing, in his own name, against riot or civil commotion. It was conceded by the court, as well

2 Wells v. Philadelphia Insurance Co., 9 Serg. I. R. (Pa.) 103 (1822); Johnson v. Campbell, 120 Mass. 449 (1876). See Whelen v. Goldman, 62 Misc. (N. Y. Sup.) 108, 114, 115 N. Y. Supp. 1006 (1909).

3. Brooklyn Clothing Corp. v. Fidelity-Phenix Ins. Co., 205 App. Div. (N. Y.) 743, 200 N. Y. Supp. 208 (1923); S. C. Brooklyn Clothing Corp. v. People's National Fire Ins. Co., 118 Misc. (N. Y. Sup.) 674, 195 N. Y. Supp. 27 (1922). See Phoenix Ins. Co. v. Erie Transportation Co., 117 U. S. 312, 324, 29 L. ed. 873, 6 Sup. Ct. 750 (1886) (carrier); Home Ins. Co. of New York v. Baltimore Warehouse Co., 93 U. S. 527, 543, 23 L. ed. 868 (1876) (warehouseman); Washburn-Crosby Co. v. Home Ins. Co., 199 Mass. 463, 85 N. E. 592 (1908) (carrier).

as by the insurer, that he was entitled to recover on the policy to this amount. This rule is so well settled that no case has been found in recent times in which the insurer contested its liability for the bailee's charges already earned.

May the bailee insure the bailed property to cover the charges which he *would* have earned by the performance of his contract, but for the destruction of the goods due to a peril insured against? The bailee's net loss is the difference between what it would have cost him to perform the services, and the compensation which he would have been entitled to collect therefor. To the extent of his prospective profits, the bailee sustains a direct loss or damage if the bailed article is destroyed, and to this extent he may collect under his insurance policy upon the goods.[4]

THUS, in the California case cited, the shipowner who was about to take on a cargo of lumber, procured marine insurance "for not to exceed $15,000 on freight on lumber. . . . shipped or to be shipped on board the Steamer Victoria at and from Puget Sound to Taku Bar," in China. The lumber was subsequently loaded on board, and the vessel was stranded, necessitating the throwing overboard of a part of the lumber and the transshipment of the remainder in another vessel. The Supreme Court of California held that the shipowner could collect the amount of freight which it would have earned had the voyage been completed, though it did not fix the exact amount of recovery. While the decision is based upon a provision of the California statutes,[5] it seems clear that the same principle would be applied under the common law in states having no such statute.[6] This principle would not be confined to marine insurance.

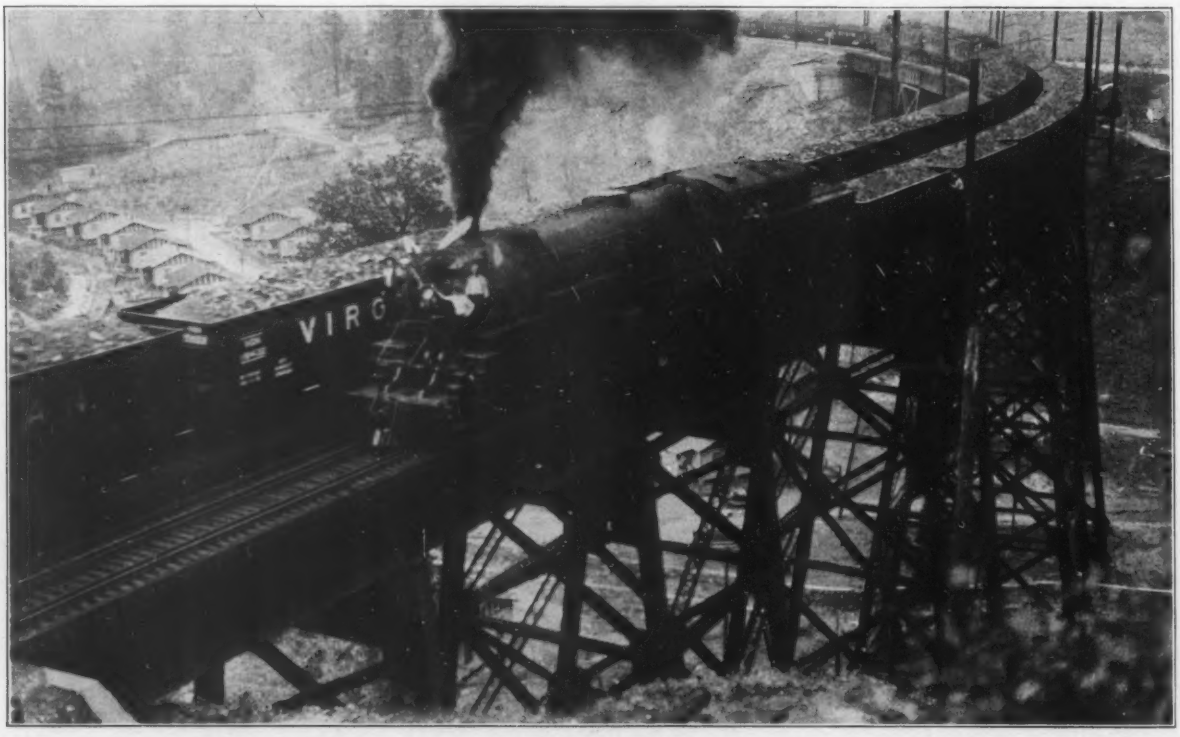
A different kind of proprietary interest is presented where the bailee has the right to use the goods for his own benefit during the term of the bailment. Here again the bailee will sustain loss or damage if the bailed property is destroyed, and may insure it in his own name. Thus, in an Alabama case, a canning company which had leased two canning machines for three years, on an annual rental, took out fire insurance on the machines. The court conceded that the "lessee" (bailee) had an insurable interest in the machines, though it was not called upon in this case to fix the amount of insurance money which the bailee could collect and keep.[7] According to the principle of indemnity, he should recover only the value which the use of the machines would have had for the period from the fire to the expiration of the lease, minus the rent he would have had to pay the lessor for that period.

In all of these cases, the three principles above mentioned are satisfied. The bailee recovers on his policy no more than indemnity, the amount of loss or damage which he sustained. Consequently, he can never gain by destroying the insured property, or by wagering upon its destruction.

INCIDENTALLY, it is of practical value to know what words the bailee must insert in his policy in order to protect his proprietary interest. In marine insurance, by immemorial custom, the insured need not state in his policy the

(*Continued on page 28*)

4. Victoria Steamship Co. v. Western Assurance Co., 167 Cal. 348, 139 Pac. 807 (1914).
5. "Sec. 2662. The owner of a ship has an insurable interest in expected freightage which he would certainly have earned but for the intervention of a peril insured against."
6. Adams v. Warren Insurance Co., 22 Pick. 39 Mass. 163 (1839); Joyce, Insurance (2nd ed.) § 897.
7. Houston Canning Co. v. Virginia Can Co., 211 Ala. 232, 100 So. 104 (1924).



All Kinds of Commodities Are Intrusted to Bailees Whose Interests Need Insurance Protection

Property and Casualty Insurance

Side Lights On the Importance of Closer Understanding Between All Parties Connected With These Branches of Underwriting

By AVARD L. BISHOP

Professor of Business Administration, Yale University

ARTICLE V.

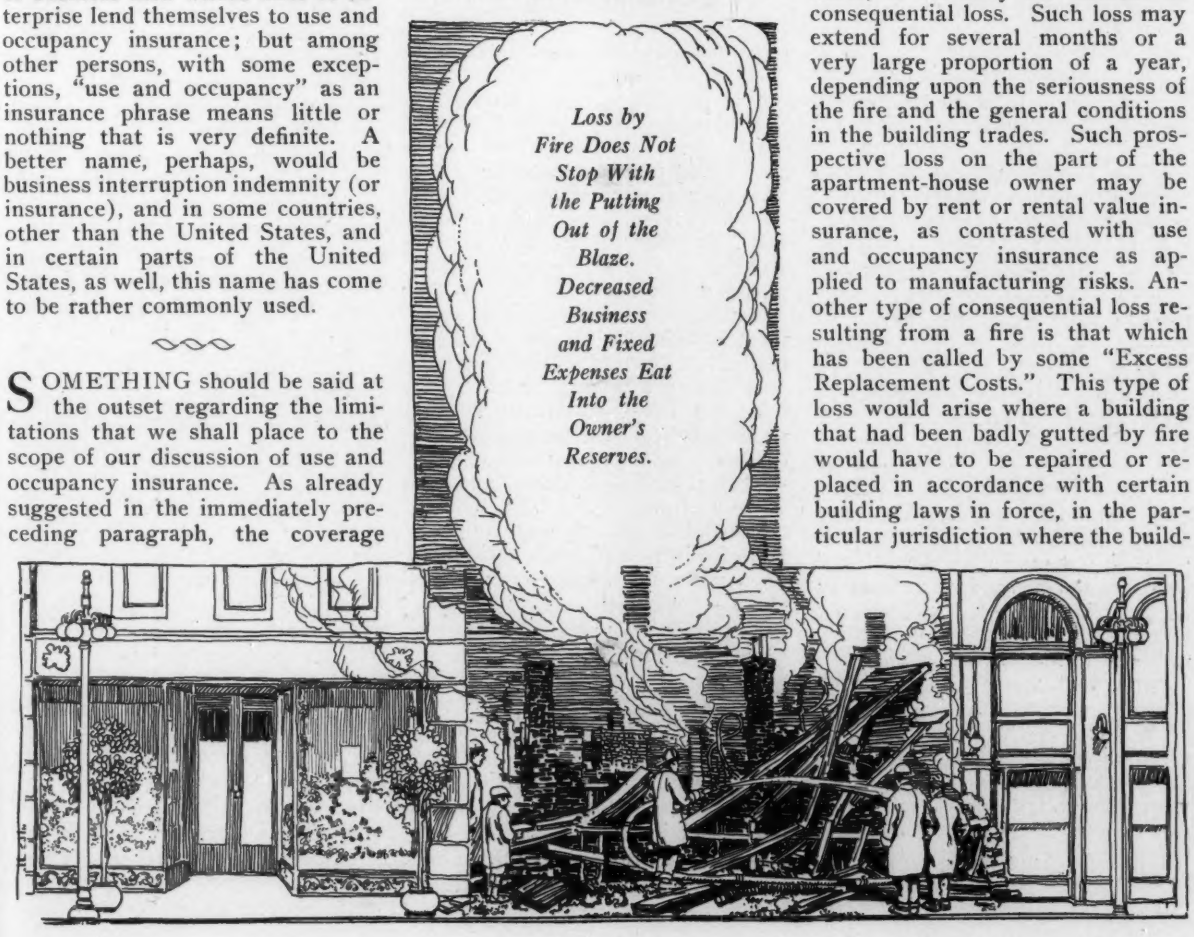
USE AND OCCUPANCY COVERAGE

USE and occupancy insurance is one of the numerous "special lines" written by insurance companies. Although it is written particularly in connection with fire policies, it is furnished also, when desired, with certain other forms of coverage, such as steam-boiler, explosion, or tornado insurance. It is the usual custom among the companies for use and occupancy insurance to be evidenced by the attachment of a form or endorsement to the regular insurance policy (the fire insurance policy, for example), rather than by issuing a separate policy.

Both the general nature and the details of this type of coverage are well-known, of course, among those who are informed regarding the technique of underwriting, and among a considerable proportion of business men whose lines of enterprise lend themselves to use and occupancy insurance; but among other persons, with some exceptions, "use and occupancy" as an insurance phrase means little or nothing that is very definite. A better name, perhaps, would be business interruption indemnity (or insurance), and in some countries, other than the United States, and in certain parts of the United States, as well, this name has come to be rather commonly used.

SOMETHING should be said at the outset regarding the limitations that we shall place to the scope of our discussion of use and occupancy insurance. As already suggested in the immediately preceding paragraph, the coverage applies in a general way to losses involved in business interruption. Now the losses from business interruption may be caused in many different ways. For example, a serious windstorm may cause interruption of certain forms of business, and so may an earthquake, or a violent explosion. It is also a well-known fact that business may be interrupted through the premature leakage of automatic sprinklers or from the activities of burglars, or because of various other types of catastrophies, including fire. Interruption of business as the result of these causes, other than the last one mentioned, would not come within the general field of use and occupancy insurance as we are undertaking to discuss the subject here. In other words, the only casualty necessitating use and occupancy insurance (business interruption indemnity) that we have in mind in the present discussion is fire. Nor is it the fire itself directly with which we are concerned in use and occupancy coverage; rather with the indirect or consequential losses which follow the fire itself.

But, it should be pointed out that there are various classes of indirect or consequential losses resulting from fire. For example, if a serious fire renders an apartment house uninhabitable, loss of rents on the part of the landlord, during the time that repairs are being made, is certainly an indirect or consequential loss. Such loss may extend for several months or a very large proportion of a year, depending upon the seriousness of the fire and the general conditions in the building trades. Such prospective loss on the part of the apartment-house owner may be covered by rent or rental value insurance, as contrasted with use and occupancy insurance as applied to manufacturing risks. Another type of consequential loss resulting from a fire is that which has been called by some "Excess Replacement Costs." This type of loss would arise where a building that had been badly gutted by fire would have to be repaired or replaced in accordance with certain building laws in force, in the particular jurisdiction where the build-



Loss by Fire Does Not Stop With the Putting Out of the Blaze. Decreased Business and Fixed Expenses Eat Into the Owner's Reserves.

ings happened to be situated, which call for more costly construction than though it were possible exactly to duplicate the original building. Another type of consequential loss because of a fire is the loss of profits. Such loss, of course, might be covered by profits insurance; but, strictly speaking, this form of coverage might properly be illustrated by the loss of profits, for example, on merchandise already produced that was contained in a warehouse or a store, let us say, but which because of the fire had been rendered unsalable. That is to say, profits insurance, strictly speaking, does not include the expected future profits on goods not yet manufactured, from the operations of a business which had been interrupted by fire. Goods already produced—finished stock—are the proper subject for profits insurance as such.

FOR the sake of clearness, it may be well at this point to contrast the *direct* and *indirect* losses from fire, in order that the nature of the latter may be brought the more prominently to our attention. The direct loss affects the property that is burned; it is very quickly brought about inasmuch as the fire itself is usually of short duration, lasting at most for a few hours, in the typical case, and in any event only until the fire has directly damaged or completely destroyed the property in question.

It is this direct loss or damage which most people, particularly those who have never had a fire, have in mind when they hear of a fire affecting the property of some other person; it is the loss or damage to the physical property—the factory, the warehouse, the office building, and so on, as the case may be. Such loss is covered by the ordinary fire insurance policy. This commonly-used contract was designed centuries ago for the purpose of indemnifying the insured who suffered *direct* loss or damage by fire. The loss or damage to the manufacturing plant or the factory or the warehouse that catches fire is, we repeat, a direct loss. If such property is covered by fire insurance, the insurance company or companies involved stand ready to make good the loss in accordance with the policy provision. It is this type of *direct* loss upon which the general public centers its attention. It is also true that far too often the insured also either overlooks entirely, or pays little attention to, any other form of potential loss until after the fire actually has taken place.

The indirect or consequential loss that comes properly under the head of use and occupancy insurance is that type of loss which an owner, whether an individual, a partnership, or a corporate organization, becomes very conscious of, sooner or later, after the direct loss has been suffered. It is the loss of use of the property—the manufacturing or mercantile plant—while the building is again being made ready for use or occupancy. In the case of a very serious fire it will take, in all probability, several months, possibly a year or more, to get the building rebuilt. In the meantime, there is the loss of profits on goods that might have been made, had the fire not taken place. This may be a very considerable item, depending upon such factors as the size of the business unit in question, the general demand at the time for its products, and the margin of profits which at the particular time the fire took place were being reaped. But this is not necessarily the largest consequential loss that has to be borne by the individual or company in question. Salaries must be paid in the meantime to the executives and other important officials. The working force also (the organization, so to speak), must be kept together. Consequently, a considerable numbers of charges must be met in order to maintain the organization intact ready to begin operations once the building is again ready for use.

THE JOURNAL of AMERICAN INSURANCE

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Brings To Its Readers Each Month A Group Of Authoratative Articles On Live Subjects by the Foremost Scholars of American Universities

IN one case that we have seen reported, the officers of the manufacturing company whose plant had suffered a disastrous fire found that the following essential payments had to be made pending the resumption of business: salaries of officers and of the sales force; fees for directors and auditors; insurance of various kinds, taxes, and rentals; interest on bonds, on bank loans, and other notes; dividends on stocks; payments for advertising contracts previously made; lighting; payments on certain machines that had been bought on the installment plan; and wages of technically-skilled employees. These payments, added to the loss of profits on goods that might have been produced had working operations not been interrupted during the months the plant was being rebuilt, amounted each month to a very substantial sum. Prosperous business enterprises carrying heavy fire insurance of the ordinary type have in times past been forced into bankruptcy because of consequential losses resulting from a fire, even though it was reported immediately following the fire that the business enterprise was "fully covered" by insurance. It should be noted, however, that full coverage by insurance, in the ordinary use of the term, applies to the physical property of the company and has no application whatsoever, without special provisions therefor, to the consequential losses.

The risk of having to make such payments as those listed above as the consequence of a fire is an insurable risk coverable by the use and occupancy (or business interruption) rider. Such coverage, we repeat, is not granted in the ordinary fire policy. The usual coverage granted in the ordinary fire insurance policy without the attachment of a use and occupancy rider does *not* include "compensation for loss resulting from interruption of business or manufacture." This quotation taken directly from the New York standard policy form which, as already mentioned in these articles, has very wide usage in the United States, distinctly states the failure of the standard policy to give use and occupancy coverage. In other words, if such coverage is desired it must be provided by the purchase of additional insurance evidenced by the use and occupancy form being attached to the regular fire policy.

Property and Casualty Insurance

(Continued from preceding page)

ALTHOUGH there is no single standard form of the use and occupancy rider, it is clear that indemnity should be provided in this type of insurance to cover certain essentially different factors. In the first place, there should be, as previously intimated, coverage, if desired, for the net profits that reasonably might have been made had the fire not taken place in the plant. This form of indemnity does not overlap with profits insurance as such, inasmuch as the latter is a coverage relating to goods already produced, not goods that are expected to be produced by future operations. In other words, the use and occupancy coverage specifically should exclude, and, so far as we are aware, does exclude, liability on the part of the insurance company with respect to profits on finished stock.

In the second place, use and occupancy coverage should extend to all fixed expenditures and payments that the business organization concerned should reasonably incur during the time that production operations are necessarily suspended in whole or in part in the plant. It is only reasonable that the insurance company granting use and occupancy coverage should be liable, upon the payment of the proper premium, to furnish indemnity for that length of time during which the person or firm should fairly be expected to rebuild or replace the property that has been damaged by fire. No general rule can be laid down with reference to the expenditures and charges that would come under the terms of a use and occupancy rider. The nature of the business and the particular circumstances in any case in question must necessarily influence the situation. In certain businesses where highly-skilled employees are hired it would be reasonable to expect that these should be carried on the payroll during the total period of suspension of operations. In other lines of business where relatively few highly-skilled operatives are employed, a considerable percentage of the employees might perhaps be dismissed without serious injury to the business, once it has been resumed. It is rather common to insert in the use and occupancy rider a provision to the effect that "during the time of total suspension of business, liability under this policy shall not exceed $X for each business day of such suspension." The amount inserted here is pretty sure to be less than the total amount of loss actually suffered by the company. In other words, the purchaser of the use and occupancy coverage is for all practical purposes a co-insurer for a certain percentage of the loss. Coverage is sometimes granted, however, without any element of coinsurance on the part of the purchaser, the coverage being virtually a valued coverage, inasmuch as there is paid by the insurance company a certain definite amount periodically during the entire period of total interruption of business. In this case the insured is not subjected to the necessity of proving to the company periodically the exact amount of its actual loss on account of overhead, etc.

The
CHRISTMAS NUMBER
of the
JOURNAL OF AMERICAN INSURANCE
Will Be Exceptionally Interesting Because of Special Features Attractively Presented

In the third place, use and occupancy coverage might well be extended to include another factor somewhat difficult to define. In certain instances where such coverage has been granted it has been made to include "expenses incurred for the purpose of reducing the loss."

IT is not possible within the limits of this article to enter into details with respect to the coverage granted by the different forms of use and occupancy rider. This type of underwriting is highly technical in character and necessarily has to be adjusted in any particular case to meet the situation which prevails. In this respect we are reminded of group insurance in the life insurance field. The ordinary underwriter is not always able to handle the writing of a group insurance policy. Similarly, it requires a man of considerable experience in the fire insurance field to grant the proper form of coverage that will be equitable as between the insured and the insurer where use and occupancy coverage is desired.

Use and occupancy insurance may properly be listed among the more recent types of coverage. Its use was very limited until within the last two or three decades. Due largely to the newness of this type of coverage standardization so far has made relatively little progress in use and occupancy insurance. It is rather generally agreed, however, that policy forms are being improved and that it will be only a question of time before one or a few standard endorsement forms will have been evolved.

In conclusion, it is only reasonable to expect that the future will see a tremendous development of use and occupancy insurance. The demand for this form of coverage, as we see it, is likely to be strong, once the large number of business organizations in this country, large and small, whose line of enterprises are adapted to this form of coverage, come to an appreciation of the very important protection that use and occupancy insurance offers. The indispensability of the ordinary fire insurance protection for *direct* loss by fire is now scarcely questioned; the necessity of purchasing indemnity in the event of *business interruption following a fire* can hardly be regarded as of any less importance.

Come To Think Of It

Judge: "Well, John, I can give you this divorce, but it will cost you three dollars."
John: "Three dollars, boss?"
Judge: "That's the fee."
John: "Well, boss, I jes' tell ya, I don't b'lieve I wants no divorce. There ain't three dollars difference 'tween dem two wimmen."—*Alabama Rammer-Jammer.*

Ask Me Another

The following conversation took place during a physical examination of freshmen.
Dr. Bennett: "Calf?"
Frosh: "Fourteen inches."
D. B.: "Thigh?"
F.: "Twenty-six inches"
D. B.: "Neck?"
F.: "Yes."—*Tennessee Mountain Goat.*

Admiring the View

Country Cousin (after prolonged inspection of building operations): "I don't see the sense of putting statues on the top of your buildings."
City Cousin: "Statues? Those aren't statues. They're bricklayers." *Hardware Age.*

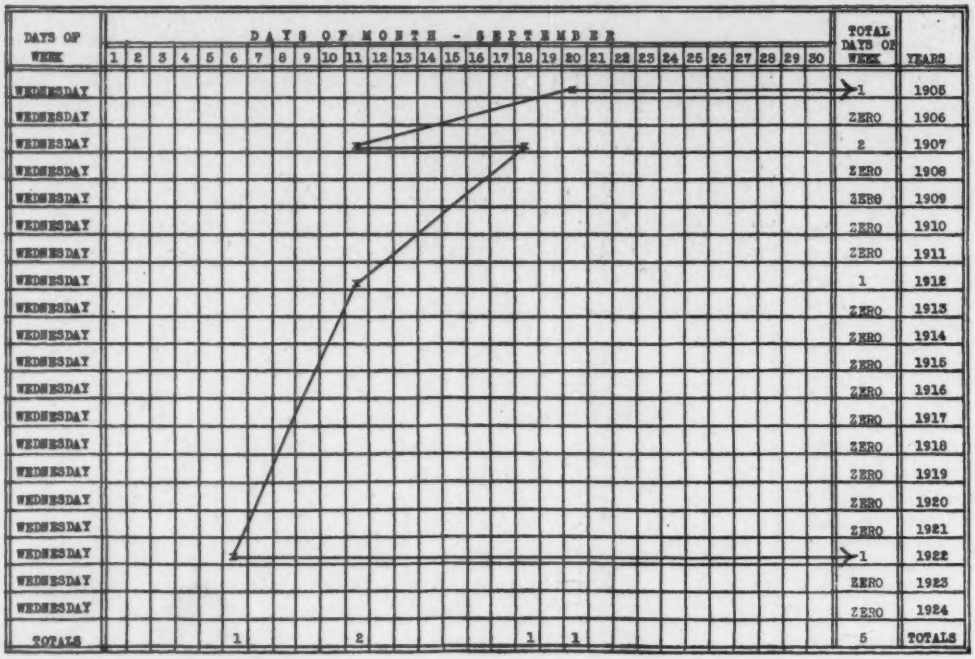
DAYS OF WEEK
DAYS OF MONTH - SEPTEMBER
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
TOTAL DAYS OF WEEK
YEARS
WEDNESDAY 1 1905
WEDNESDAY ZERO 1906
WEDNESDAY 2 1907
WEDNESDAY ZERO 1908
WEDNESDAY ZERO 1909
WEDNESDAY ZERO 1910
WEDNESDAY ZERO 1911
WEDNESDAY 1 1912
WEDNESDAY ZERO 1913
WEDNESDAY ZERO 1914
WEDNESDAY ZERO 1915
WEDNESDAY ZERO 1916
WEDNESDAY ZERO 1917
WEDNESDAY ZERO 1918
WEDNESDAY ZERO 1919
WEDNESDAY ZERO 1920
WEDNESDAY ZERO 1921
WEDNESDAY 1 1922
WEDNESDAY ZERO 1923
WEDNESDAY ZERO 1924
TOTALS 1 2 1 1 5 TOTALS

PLATE No. IV—Rainfall Diurnals — Rainfall Occurrence—September. Correlation of days of the week (Wednesday) with a tenth (0.10) of an inch or more of rainfall between the hours of 2 p. m. and 9 p. m. during a period of twenty years (1905 to 1924 inclusive) at the U. S. Weather Bureau Station, New York City.

See Note A—Plate I.

Rainfall Hazard

(Continued from page 14)

movement of anti-cyclonic HIGHS and cyclonic LOWS, that aviators must contend with in every flight, whether over land areas, or over water areas. Therefore, what follows in this discussion will have a measure of important interest for air-pilots and air-transportation companies, as well as for those persons engaged in the underwriting of weather hazards.

THE altitude of the sun when it crosses the meridian of a place at noon, the length of the daytime, and the distance of the earth from the sun, are all in a perpetual state of variation, except that near the equator the periods of day and night are always equal. The distance from the sun, of any place on the earth, varies by reason of the fact that the orbit of the earth is an elipse, with the sun in one of the foci. Therefore, the period of the sun above the horizon and its altitude at noon, changes from day to day, and from winter to summer, owing to the fact that the earth's axis is inclined at nearly a constant angle to the plane of its orbit, otherwise termed the ecliptic.

The degree of these changes depends upon the amount of the inclination, or the obliquity of the ecliptic. Laplace, in 1801, determined that this oscillation was about 1°-22′-34″ and the obliquity 23°-28′; now regarded as 23°-5′, neglecting the effect of the slow precession of

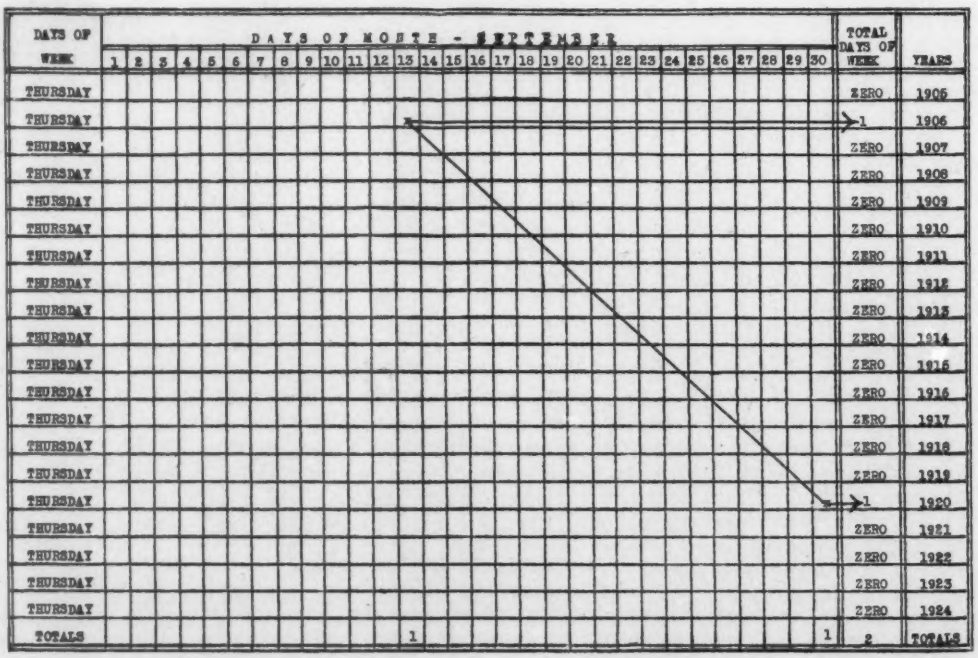
DAYS OF WEEK
DAYS OF MONTH - SEPTEMBER
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
TOTAL DAYS OF WEEK
YEARS
THURSDAY ZERO 1905
THURSDAY 1 1906
THURSDAY ZERO 1907
THURSDAY ZERO 1908
THURSDAY ZERO 1909
THURSDAY ZERO 1910
THURSDAY ZERO 1911
THURSDAY ZERO 1912
THURSDAY ZERO 1913
THURSDAY ZERO 1914
THURSDAY ZERO 1915
THURSDAY ZERO 1916
THURSDAY ZERO 1917
THURSDAY ZERO 1918
THURSDAY ZERO 1919
THURSDAY 1 1920
THURSDAY ZERO 1921
THURSDAY ZERO 1922
THURSDAY ZERO 1923
THURSDAY ZERO 1924
TOTALS 1 1 2 TOTALS

PLATE No. V.—Rainfall Diurnals — Rainfall Occurrence—September. Correlation of days of the week (Thursday) with a tenth (0.10) of an inch or more of rainfall between the hours of 2 p. m. and 9 p. m. during a period of twenty years (1905 to 1924 inclusive) at the U. S. Weather Bureau Station, New York City.

See Note A—Plate I.

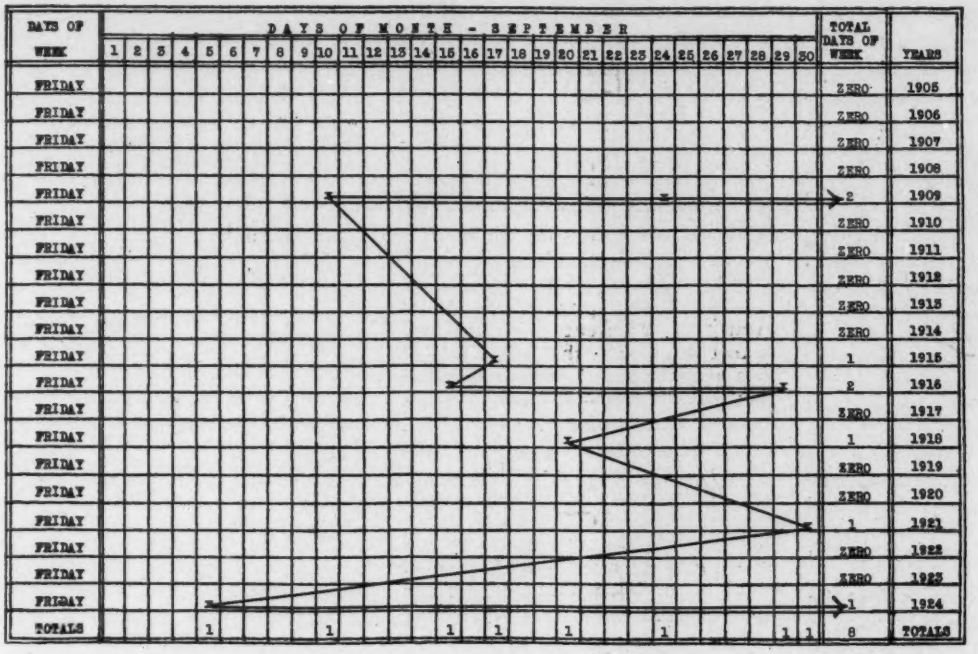
DAYS OF WEEK
DAYS OF MONTH - SEPTEMBER
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
TOTAL DAYS OF WEEK
YEARS
FRIDAY ZERO 1905
FRIDAY ZERO 1906
FRIDAY ZERO 1907
FRIDAY ZERO 1908
FRIDAY 2 1909
FRIDAY ZERO 1910
FRIDAY ZERO 1911
FRIDAY ZERO 1912
FRIDAY ZERO 1913
FRIDAY ZERO 1914
FRIDAY 1 1915
FRIDAY 2 1916
FRIDAY ZERO 1917
FRIDAY 1 1918
FRIDAY ZERO 1919
FRIDAY ZERO 1920
FRIDAY 1 1921
FRIDAY ZERO 1922
FRIDAY ZERO 1923
FRIDAY 1 1924
TOTALS 1 1 1 1 1 1 1 1 8 TOTALS

PLATE No. VI.—Rainfall Diurnals — Rainfall Occurrence—September. Correlation of days of the week (Friday) with a tenth (0.10) of an inch or more of rainfall between the hours of 2 p. m. and 9 p. m. during a period of twenty years (1905 to 1924 inclusive) at the U. S. Weather Bureau Station, New York City.

See Note A—Plate I.

the equinoxes. In 25,900 years precession completes an entire cycle, both equinoxes returning to their position at the beginning of it. On June 21st the sun has its greatest northern declination of plus 23°-27′, and on December 22nd it has its greatest southern declination of minus 23°-27′, the former corresponding to the summer solstice and the latter to the winter solstice. At these declinations the sun moves very little and seems to stand still. For this reason the ancients called the sun's place on these dates the "Solstice," meaning the standing still of the sun.

From June 21st to September 22nd the sun remains north of the equator, with its declination growing less and less, until finally on September 23rd the sun crosses the equator once more going southwards, at a point called the Autumnal Equinox. Being on the equator its declination is zero because it is 180° distant from the Vernal Equinox, the zero of right ascensions. From September 22nd until the succeeding March of the same date the sun is in the southern half of the celestial sphere. Its south declination continually increases until December 22nd, when it is 23°-27′ south in right ascension and at the point of the winter solstice. From this point the sun is moving northwards and always eastwards along the ecliptic, finally again crossing the equator at the Vernal Equinox on March 22nd. From this procession of changes we have the sidereal year

(*Continued on page 31*)

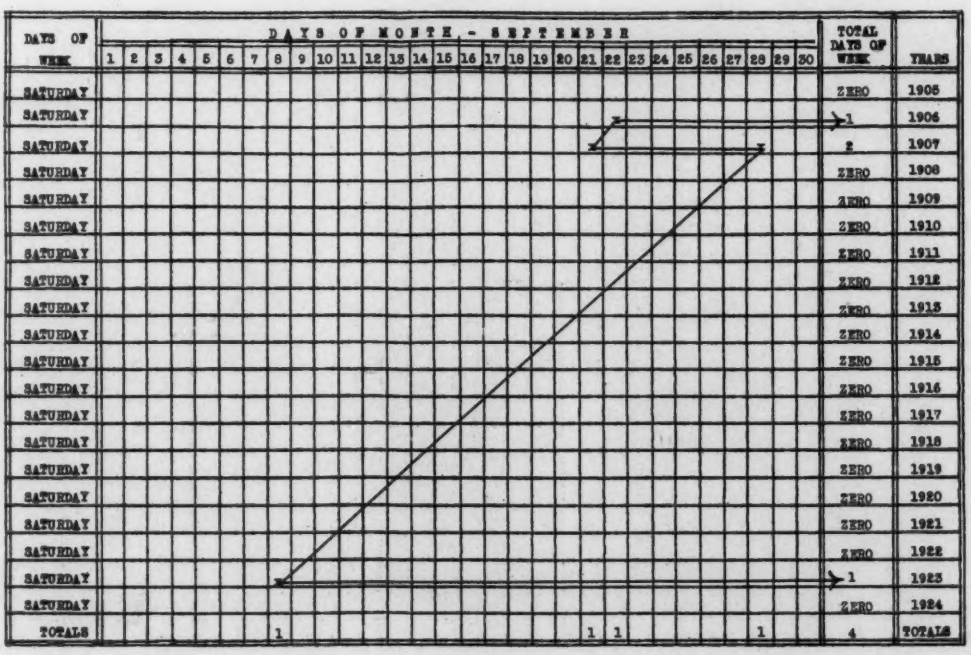
DAYS OF WEEK
DAYS OF MONTH - SEPTEMBER
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
TOTAL DAYS OF WEEK
YEARS
SATURDAY ZERO 1905
SATURDAY 1 1906
SATURDAY 2 1907
SATURDAY ZERO 1908
SATURDAY ZERO 1909
SATURDAY ZERO 1910
SATURDAY ZERO 1911
SATURDAY ZERO 1912
SATURDAY ZERO 1913
SATURDAY ZERO 1914
SATURDAY ZERO 1915
SATURDAY ZERO 1916
SATURDAY ZERO 1917
SATURDAY ZERO 1918
SATURDAY ZERO 1919
SATURDAY ZERO 1920
SATURDAY ZERO 1921
SATURDAY ZERO 1922
SATURDAY 1 1923
SATURDAY ZERO 1924
TOTALS 1 1 1 1 4 TOTALS

PLATE No. VII.—Rainfall Diurnals—Rainfall Occurrence—September. Correlation of days of the week (Saturday) with a tenth (0.10) of an inch or more of rainfall between the hours of 2 p. m. and 9 p. m. during a period of twenty years (1905 to 1924 inclusive) at the U. S. Weather Bureau Station, New York City.

See Note A—Plate I.

Bailees

(*Continued from page 22*)

nature or extent of his interest, and may recover the amount of loss or damage to his interest, whatever it may be,[8] unless the non-disclosure amounts to a fraud on the insurer. Thus, in the Pennsylvania case, the pledgee took out insurance in his own name, on the pledged goods, without any clause in the policy such as "as interest may appear," "on account of whom it may concern," or other words which would notify the insurer that the insured had only a limited interest; it was held, nevertheless, that he was entitled to collect to the extent of his limited interest. In fire insurance on the other hand, the policy usually contains a printed warranty that the insured is "sole and unconditional owner," which means that if the insured is not, he cannot get judgment against the insurer, unless in another part of the policy the insured's interest in the property is indicated to be otherwise. The "proprietary" interests of the bailee, above described, do not amount to "sole and unconditional ownership,"[9] and hence the bailee is not insured under the ordinary form of fire insurance policy made out to him in his own name. What special provision must be inserted in the policy to cover the bailee's interest? While a full discussion of this question is beyond the limits of the present paper, some forms of satisfactory clauses may be noted. Where the description of the property given in the policy expressly states "for the amount of earned freight and charges, if any, thereon,"[10] or words equally specific, the requirement is clearly satisfied. However, the description of the interest covered need not, it seems, be as specific as this. Any language which notifies the insured that the policy is taken out to cover the interests of a bailee is sufficient. Thus, the phrase "his own or held in trust for others"[11] or the usual form of coverage, "their own or held by them in trust or on commission or sold but not removed,"[12] or "in which they have an interest or liability,"[13] or "property held by insured as carrier or warehouseman,"[14] are sufficient to cover the bailee's limited interest

II. The Bailee's Contingent Liability Interest

THE bailee may be liable to the bailor for the loss or damage to the bailed chattel, either (a) because of the bailee's common law liability for loss of, or injury to, the chattel, or (b) because of an express contract between the bailee and the bailor.

(a) At common law the bailee is, in the absence of express provision to the contrary, under a legal duty to take good care of the property in his possession, and is legally liable to the bailor for all loss or damage due to the bailee's negligence. The common carrier and common innkeeper are liable to an even greater extent; their liability is to compensate the bailor for all loss or injury to the goods, regardless of negligence, with certain defined exceptions. If, then, the bailed property be damaged or destroyed due to an event (e. g., a fire caused by the bailee's negligence) which imposes legal liability therefor upon the bailee, he will suffer loss by reason of the occurrence of the event and has therefor an insurable interest in the goods to that extent.

The judicial decisions uphold this view with substantial unanimity. Thus, in a Maryland case,[15] a company engaged as a common carrier in transporting grain from an elevator to a steamer in the harbor, took out marine insurance on the grain on board its scows, "on account of whom it may concern." The grain was lost due to a peril insured against, and the insured (carrier) was obliged to pay a judgment for $2,500 because the carrier was liable to the owner for the loss. The court held that the carrier could recover $2,000, the amount named in his policy, saying: "There can be no doubt that the appellee had an insurable interest in the corn for its own benefit—in order to indemnify itself against a possible liability for loss." This rule was applied by the United States Supreme Court in a marine insurance case involving a more complicated set of facts.[16] The following statement in the opinion of Gray, J. (for the court) has often been quoted by other courts:

> "So a common carrier, a warehouseman or a warfinger, whether liable by law or custom to the same extent as an insurer, or only for his own negligence, may, in order to protect himself against his own responsibility, as well as to secure his lien, cause the goods in his custody to be insured to their full value, and the policy need not specify the nature of his interest."[17]

(*To be concluded in our next issue.*)

Professor PATTERSON Will Continue His Discussion of the INSURABLE INTERESTS OF BAILEES in the Next Number

8. Wells v. Philadelphia Ins. Co., *supra*, note 2. See Phoenix Ins. Co. v. Erie Transportation Co., *supra*, note 3; Willamette Navigation Co. v. Hartford Fire Ins. Co., 287 Fed. 464 (C. C. A., 1923). However, insurance on "goods" only would not cover loss of profits.
9. Joyce, Insurance (2nd ed.) § § 2027, 2053, 2054.
10. As in Fire Insurance Ass'n. of England v. Merchants' and Miners' Transportation Co., 66 Md. 339 (1887). A similar clause is found in the policy involved in Kellner v. Fire Association of Philadelphia, 128 Wis. 233, 106 N. W. 1060 (1906).
11. See Grandin v. Rochester German Ins. Co., 107 Pa. St. 26, 38 (1884).
12. See Johnson v. Campbell, *supra*, note 2; Brooklyn Clothing Co. v. People's National Fire Ins. Co., *supra*, note 3.
13. See Home Ins. Co. of New York v. Baltimore Warehouse Co., *Supra*, note 3.
14. See Washburn-Crosby Co. v. Home Ins. Co., *supra*, note 3.
15. Western Assurance Co. v. Chesapeake Lighterage & Touring Co., 105 Md. 232 (at p. 248), 65 Atl. 637 (1907).
16. Phoenix Ins. Co. v. Erie Transportation Co., 117 U. S. 312 (at p. 324), 29 L. ed. 873, 6 Sup. Ct. 750 (1886). The carrier, in the bill of lading, stipulated that it should have the benefit of any insurance procured by the shipper. The shipper had insured the goods "on account of whom it may concern." The goods were lost due to the negligence of the carrier, and the insurer, after paying the shipper, sued the carrier on the theory that it was subrogated to the shipper's claim against the carrier for the negligent loss. The court held, however, that the insurance covered the carrier's liability for negligence, and hence the carrier, which by subrogation acquired no greater rights against the carrier than the shipper had, could not recover against the carrier.
17. 117 U. S. at p. 324. See also, as supporting the carrier's contingent liability interest, California Ins. Co. v. Union Compress Co., 133 U. S. 387, 409, 33 L. ed. 730, 736, 10 Sup. Ct. 369; Washburn-Crosby Co. v. Home Ins. Co., *supra*, note 3; Willamette Navigation Co. v. Hartford Fire Ins. Co., *supra*, note 8.

Rating in Pennsylvania

(*Continued from page 8*)

value is $700; for $5000 of premium the value is $900, etc.—up to $80,000 of premium or over when $2700 is used. The reason for this limitation is apparent when we consider that it takes considerable payroll exposure to give rise to an accident every five years (the experience period) which causes a death or permanent total.

The Major Permanents are used as reported.

The use of multipliers is necessary for Minor Permanents because the payments which were made during the experience period were based on conditions existing in those years and on account of the changes which have occurred this experience must be translated to approximate present conditions. For this purpose the same multipliers are used which the rating bureau has ascertained for the purpose of translating the data used in making the manual rates for 1927. Since there were no Minor Permanents compensated in 1921 and 1922 they have been estimated by increasing the Temporaries by 25% (for mfg. risks) for each of those years and thereafter are used as reported.

The Medical Costs for 1924 and 1925 were greater than those for 1921, 1922 and 1923 and it is assumed the 1924-25 conditions will continue. Therefore the medical costs for 1921, 1922, 1923 are stepped up to the 1924-25 level by increasing them, 15, 10 and 5 percent, respectively.

The multipliers used for 1927 are summarized as follows:

	1921	1922	1923	1924	1925
Temporary Comp. Manufacturing	1.25	1.25	1.00	1.00	1.00
Other Industry	1.10	1.10	1.00	1.00	1.00
Medical Cost	1.15	1.10	1.05	1.00	1.00

"Expected Losses" are found by multiplying the manual or schedule premium for the risk by .60 and substracting .0001 of payroll. It should be mentioned that 40% of the manual rate consists of expense loading and before adding the expense loading .01 per $100 of payroll was added for catastrophe loss. The "Realized Losses" it will be noted pertain to compensation payments or loss costs only and do not include expense loading. Therefore in order to place the "Expected Losses" on a comparable basis with the "Realized Losses" it is necessary to remove the loading and the process just described accomplishes this.

If a risk were to receive full credit or full penalty for the extent which it deviates from the expected we could now solve the first part of the formula:

$$\frac{\text{Realized Losses} - \text{Expected Losses}}{\text{Expected Losses}}$$

and apply the resulting plus or minus to the manual or schedule rate. However, we do not use the full amount of the credit or the debit unless the payroll for the experience period yields at current manual rates a premium of $80,000 or more. This means that only the very large risks get the full penalty or benefit of their deviation.

The Percentage of Credibility.

FOR the smaller risks a scale of credibility factors has been established depending on the amount of their premium at manual rates and resembling in principle the maxium value of one accident previously described. These credibility factors are expressed in percentages of the maximum allowable credit (or debit) instead of flat sums and the percentage is applied to the results obtained by working through the first part of the formula. Thus on a risk with a $1000 premium at current manual rates the actual deviation is multiplied by 5%, which is the maximum allowable credit or the credibility factor. As the premium at current manual rates goes up the credibility or extent to which the deviation may be believed also increases. Thus for $3000 of premium the credibility

View Along Hamilton Walk, University of Pennsylvania

Aviation Insurance

(Continued from page 17)

Statement which had been filled out either when the pilot registered or when his employer applied for insurance to any one of the members of the Association. This information was checked up and certified by every means possible.

The following is a copy of the finally modified code and it is particularly interesting because it indicates the attempt of these early underwriters to put their judgment regarding this most important hazard factor on as scientific a basis as possible.

Pilots Grading Code 1921

1. *Age.*
   25 to 33 inclusive allow 50 points.
   Deduct 10 points for each year under 25.
   Deduct 7 points for each year over 33.
2. *Physical Condition.*
   First class normal condition, allow 60 points.
   Use judgment in making deductions.
3. *Training.*
   For completion of course at recognized field or school allow 75 points.
4. *Hours Flown* (including training, cross-country and commercial).

	Points
1000 hours and over	135
750-999	122
500-749	90
200-499	68
150-199	40
100-149	27
50- 99	4

5. *Cross Country* (Only).

	Points
50 hours and over	110
40-49	88
30-39	66
20-29	37
10-19	22
5- 9	7

6. *Commercial Schedule* (Only).

	Points
50 hours and over	170
40-49	136
30-39	102
20-29	57
10-19	34
5- 9	11

7. *Instructor* (30 hours minimum).
   For experience as instructor allow 65 points.
8. *Crashes* (unavoidable crashes not considered).
   For *no* crashes allow 230 points; for *one* crash allow 9 points; for *two* crashes not eligible for insurance.
9. *Types Flown.*

	Points
One engined land plane	10
Two engined land plane	15
One engined sea plane	15
Two engined sea plane	20
Bomber	20
Mono, Tri, Multi	25
Total	105

Rating in Pennsylvania

(Continued from Page 29)

rate is 9%, at $6000 it is 15%, at $15,000 it is 33%, etc., up to $80,000, where it is 100%. In other words, it is believed that we do not have a perfect operation of the law of averages or the law of large numbers until we reach a payroll which produces a premium of $80,000. Incidentally the fact that full credit is allowed at this point is a powerful argument against self-insurance by large risks.

With the component parts of our formula now defined we may apply it to a specific risk. Thus let us suppose that the Machine Shop which we previously schedule rated is also subject to experience rating. The payroll on this risk for the experience period was $905,200, which at the current manual rate of .95 would yield $8599 of premium and at the schedule rate of $.954 a premium at $8636. During the experience period the risk caused actual loss payments which amounted to $7252 *when translated* according to our previously described method. This supplies the "Realized Losses" for our formula. The "Expected Losses" on a schedule rated basis are found by multiplying $8636 by $.60 and subtracting .0001 of payroll. This leaves $5091 for "Expected Losses" in our formula. We find by referring to the scale of "maximum allowable credits" that the premium at current manual rates is between $8,500 and $9000 and for which 20% is used as the credibility factor.

Substituting the figures in our formula and solving* (see below), we get plus 8%. This means that the schedule rate on the risk is to be increased 8%. However, it is customary to quote an experience rate in terms of the manual rate even though the experience rate is applied to the schedule rate. It will be remembered our schedule rate was expressed as 100% of the manual rate therefore, if we increase the schedule rate 8% it is 108% of the manual rate and that is the way the experience rate on the Machine Shop would be stated.

Liability Insurance

(Continued from Page 11)

The following injuries are excepted: Those caused by any person employed by the insured on an elevator in violation of law; by any elevator not mentioned in the application; those the result of structural alterations (unless by permission of the company); or caused by any one of enumerated hazards covered by other policies, as automobile, teams, etc.

(3) The company promises *to settle* or pay out of court all claims or suits if expedient in its estimation. A large percentage of claims are terminated in this manner.

(4) Finally, the company promises to pay awards and costs assessed against the insured in a suit; all expenses of defense incurred by the company; interest on judgments, if any; and the expense incurred by the insured for immediate surgical relief. This promise to pay has placed upon it two limitations; one by the so-called policy limits, the other by the "other insurance" clause.

AS in all third party insurance, where there is no definite amount at risk, miscellaneous public liability policies have no face value. The company, unwilling to assume a hazard which potentially runs into the thousands and hundreds of thousands, therefore establishes so-called policy limits to the amount of indemnity for a specified premium. As in the other lines, the usual limits are $5-10, which means that the maximum liability of the company for injuries or death to one person is $5000, and for any number of persons in one accident $10,000. It is important to note that sometimes policy limits apply only to the promise of court award indemnity and not to other expenses which will be paid in addition. A policy with higher limits than the standard $5-10 may be secured if desired, the premium, for example, for all but extra-hazardous classifications being 120 percent of the standard premium for $10-20; 129 percent for $20-25; 152 percent for $50-200, and so on.

The "other insurance" clause is similar to that found in all property damage and liability policies. It provides that the insuring company is liable for loss (and/or expense) only in the proportion that the amount of its policy bears to the whole amount of valid and collectible insurance.

(To Be Continued)

Well Hooked

Father: "Isn't that young man rather fast?"

Daughter: "Yes, but I don't think he'll get away."—*Ski-U-Mah.*

Be Specific

Any player or players using obscure language will at the request of the umpire leave the grounds.—*Illinois Paper.*

*$7252. (Realized Losses)—$5091. (Expected Losses) / $5091 × 20% (Maximum Credibility)

Rainfall Hazard

(*Continued from page 27*)

(the interval of time between two successive returns of the sun to the same star) of 365 days, 6 hours, 9 minutes and 9.3 seconds; also the astronomical year, as commonly used, being the interval between two successive returns of the sun to the same equinox; its length being 365 days, 5 hours, 48 minutes and 46 seconds. The sun's diurnal path at the equinoxes of March and September is the celestial equator, being the Tropic of Capricorn at the winter solstice and the Tropic of Cancer at the summer solstice. These tropics are circles of the celestial sphere drawn parallel to the equator and 23°-30′ north and south of it. Within this area the climate of the temperate zone is slightly affected by the obliquity of the ecliptic, while it exercises a very considerable influence on the climate of the polar regions. A therm is the amount of heat required to raise one gram of water at maximum density, one degree centigrade. A thermal day represents the number of heat units received at any place on the earth's surface between sunrise and sunset. The thermal equator is the line which passes through the places of greatest heat registered on the surface of the earth. If, therefore, 365.24 thermal days represent the present total annual quantity of heat received at the equator from the sun, then 151.59 thermal days will represent the quantity of heat received at the Poles. When the obliquity of the ecliptic is at the maximum assigned by Laplace the quantity of heat received at the equator would be 363.51 thermal days, and at the poles 160.04 thermal days. The equator would, therefore, receive 1.73 thermal days less heat, and the poles 8.45 thermal days more heat, under the terms of the comparison, at which the minimum obliquity is recorded as 23°-28′ and the maximum as 24°-50′-34″. During this range of obliquity the poles would receive 19 heat rays for every 18 due at the minimum reading, under which conditions the poles would receive about the same heat as recorded at latitude 76.

The increase of obliquity would not sensibly affect the polar winter, but would materially affect the condition of the polar summer. The increase of 845 thermal days at the poles would produce, all other things being equal, a rise in the mean annual temperature of from 14 to 15 degrees. This change would favor an increase in precipitation within the polar circles, in the form of snow, increase the movement of glaciers and, in consequence, the flow of icebergs to the open polar seas and beyond. When the effects of eccentricity and obliquity are combined in the hemisphere whose winter occurred in the Aphelion would be under a condition of high glaciation, while the other hemisphere having its winter in perihelion, would be enjoying a warm and equable climate, but attended with greatly increased precipitation, unsettled weather and storms. These conditions might exert a considerable influence upon the upper limits of the temperate zone in both hemispheres.

County Base Maps. One of the latest products of the organization of which Colonel Finley is the manager, is a series of newly developed county base maps. These maps are of the utmost convenience in charting data of any kind, being drawn to scale and accurate in every detail. They are available for any county of any state, (The forty-eight states of the Union contain 3,075 counties, exclusive of the District of Columbia) and come in several sizes ready punched for filing in ring binders. Those interested should communicate with the National Storm Insurance Bureau, 511 East 164th Street, New York City.

The first part of Colonel Finley's article above will be of special interest if read in connection with Professor Sweeney's discussion of aviation in this same issue, beginning on Page 15—EDITOR.

BITS OF WIT

Counter Shopping

Judge: "Guilty or not Guilty?"
Female Prisoner: "Er—what else have you?"—*Boston Transcript.*

Naming the Twins

"So you have got twins at your house," said Mrs. Besumbe to little Tommy.
"Yes, ma'am, two of 'em."
"What are you going to call them?"
"Thunder and Lightning."
"Why, those are strange names to call children."
"Well, that's what pa called them as soon as he heard they were in the house."
—*Answers*

Life's Darkest Moment

The return to the home town of the "local boy" who has made good in the big city is rarely, we have understood, what it might be. In connection with this we have to report the particularly sad experience of a young banker who, after eight years of absence, alighted at the station of the town of his birth. There was, despite his expectations, no one on the platform whom he knew. No one. Discouraged, he sought out the baggage master, a friend since boyhood. To him at least he would be welcome, and he was about to extend a hearty greeting, when the other spoke first.
"Hello, George," he said. Goin' away?"
—*New Yorker.*

Behind the Door

"John, I wish you'd bring me home one of those tabloids."
"The kind you take with a glass of water?"
"No; the kind you take with a grain of salt."—*Boston Transcript.*

We Sympathize

The point is, now is the right time to use all kinds of exterminators: Moth, Roach, Bed Bug, Rat, Lice and Flea.
We have them!—*Ad in a West Virginia paper.*

Had Bridget's Number

Plumber: "I've come to fix that old tub in the kitchen."
Youngster: "Mama, here's the doctor to see the cook." —*Cynic.*

Life's Little Trials

"Pa, what's the difference between a hill and a pill?"
"I don't know, my son, unless it's that a hill is high and a pill is round—is that it?"
"Naw! A hill is hard to get up and a pill is hard to get down."
—*Boston Transcript.*

Grave Oversight

An empty medicine bottle, the contents of which have not been analyzed, was found in the burned clothes.
—*Salt Lake City Tribune.*

Easy Range

"Does Big Joe live near here?" said the immigrant.
"Nope," said the cowboy.
"Well, where can I find his neighbor, Long Sam?"
"I am Long Sam," said the cowboy.
"But they told me," said the immigrant, "that Big Joe lived within guns.ot of you."
"That is right," said the cowboy, "he did." —*Tit-Bits.*

Always Wagging

"Some people," said Mrs. Knagg, "have eyes and see not, ears and hear not."
"But never tongues and talk not," growled her husband. —*Ex.*

Conscientious Witness

The old-time practise of kissing the bride received a jolt at a recent Rowan County wedding when an awkward-looking guest was asked if he had kissed the bride, and replied: "Not lately."
—*Hardware Age.*

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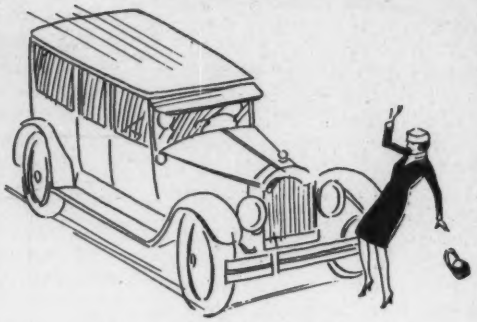
Test Your Brakes Regularly



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